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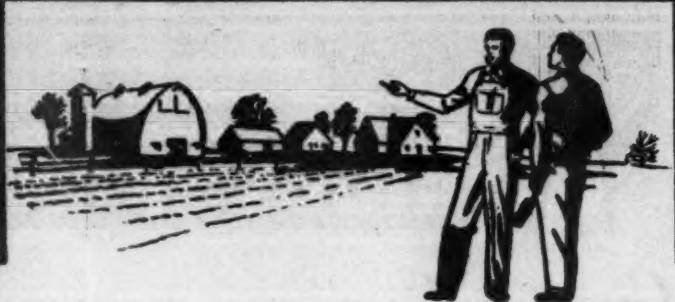


Picture legend page 153

Featuring—

Improving Facilities in
Vocational Agriculture

The Agricultural Education Magazine



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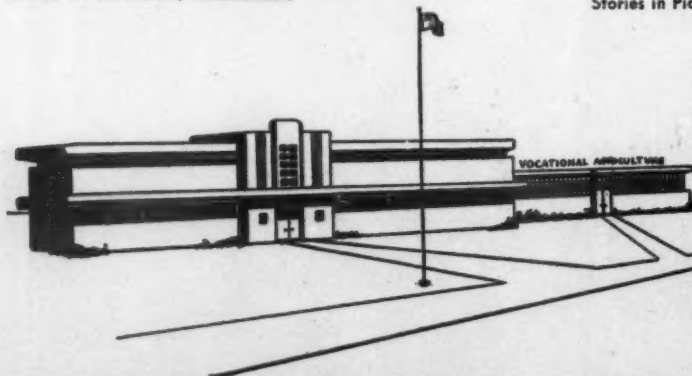
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Editorials

Guest Editorial...

J. B. McLAUGHLIN, Commissioner,
West Virginia Department of Agriculture

In the last twenty-five years as a public official in West Virginia, I have had the opportunity to observe at close range the vocational agriculture program in the state. During this time, I have had the pleasure of attending each annual State Convention held by the West Virginia Future Farmers of America and becoming acquainted with not only the leaders of the program, but the instructors of the various Chapters as well. I have considered it a real opportunity to cooperate with such a fine group of people who are doing so much for the youth of our state.

During my tenure in office, I have seen the West Virginia FFA grow from a small organization to one with approximately 6,000 members. In watching the growth of this educational program in agriculture, I have become convinced that it is sound and dedicated to those principles that will build a better farm life and economy for the state and nation.

Starting as a "green hand," a student, by working on a project, learns about agriculture in a practical way and is able to decide whether he wants to become a farmer. Not all FFA boys become farmers; some enter professional fields, industry or other vocations; but, in any event, the training they receive in vocational agriculture is an asset in later life and helps make better citizens.

The one thing that has always impressed me is the manner in which they conduct their organization activities, which is a training within itself in teaching each student higher ideals, dignity and good citizenship. It has demonstrated to each and every one of its members the technique of conducting their organization and has given opportunity for its membership to develop character, both individually and collectively. I know of no group of youngsters that can conduct the affairs of their organization better than the FFA and FHA, and it is through these activities, both in the local Chapters and the State organization, that these students are given an opportunity to develop leadership in any field of the vocation which they may choose, as well as the affairs of their communities. Their conduct, organization activities, character, dignity and the enterprises carried out on their farms have been factors in attracting the attention of leading business people in all walks of life, many of whom have become donors to the local, state and national organizations, whose funds are used in enterprises designed to encourage and promote the programs of these young men and women. Through organization activities—contests in public speaking, showmanship, etc.—many prizes are awarded to these young people who are qualifying themselves, through education, for richer and fuller lives and for better services to themselves and their communities.

The vocational students in our state are now sponsoring a program to build a youth center in the central part of West Virginia. A group of public-spirited gen-

tlemen in the county in which the center is located has presented a beautiful 231-acre plot of land to the state on which to erect buildings and facilities to care for any state-wide youth organization which desires to use these properties—of course, at times when not in use by the FFA or FHA, this center will be made available to any state-wide youth, church, business, professional, social or fraternal organization desiring to use it. It will be an institution of learning and a laboratory in which people may assemble and discuss the problems of the various activities and programs they are carrying on for the betterment of their communities and the state.

The FFA-FHA organizations, through their activities, have raised more than a hundred thousand dollars, for which contracts for three cottages have already been let and are under construction which will take care of 200 people. In addition, they propose to raise approximately two million dollars to construct twenty-five or thirty more cottages. Plans are in the making for the erection of a dining hall that will accommodate 1,000 people. This center will also have a chapel, playgrounds and a demonstrational farm. It has about ten acres of lakes, and roads are well under way and will be completed within the next four or five months. This will become one of the greatest educational centers of its kind in this state or any other state. The legislature has already appropriated a quarter million dollars to assist in the building program and the development of this institution.

I think this is one of the outstanding achievements of the vocational agricultural leadership of the state, which comprises the teachers in the local high schools working together with the students and their parents in the communities for a worthy purpose of which every member can be proud. When completed, it will be an institution out of which will come ideals, character, integrity, inspiration and education—much of which could not be gotten in any other way. It will be an edifice or monument to all those who have participated in any way, shape or form. It will be the place where many programs, not alone in agriculture, will be worked out and started on their way toward richer and fuller lives to all those who use it, in whatever vocation or profession they may be in. As for agriculture, it will be the place in which the best of agricultural education will be developed and demonstrated; it will be a show-place at which the best livestock and the best farm products grown by the various Chapters over the state can be exhibited and judged; and, it will be an institution of training which, through better planning and modern application of agricultural technique, can make farming more interesting and more profitable.

This is truly an organization that lives up to its slogan—"Learning to do, doing to learn, learning to live, living to serve."

Pennsylvania teachers believe in - -

Modern facilities for modern programs

Facilities can make a difference

D. R. McClay, Teacher Education, Pennsylvania State College



D. R. McClay

A prominent school architect recently said, "Tell me what you plan to do in your vocational agriculture department and I will design a building for your needs." This is a very practical approach to the question, "What facilities do departments of vocational agriculture need?"

A recent survey was made by the writer in Pennsylvania of facilities obtained by departments of vocational agriculture in the state since World War II. Teachers were asked to evaluate their new facilities. Following are recommendations concerning facilities needed resulting from this study.

A. THE CLASSROOM

1. The classroom should be 22' x 30' or larger in size. A room 24' x 36' is highly desirable to provide adequate floor space for storage cupboards, work counters and the like.
2. A slate or slate-equivalent black-board area 4' in height and from 12' to 20' in length should be provided.
3. Storage cupboards including drawer and shelf space should be "built-in" and should occupy one entire wall of the classroom.
4. A cork bulletin board should be provided and located in a prominent place—preferably near the door. A 4' x 4' bulletin board is minimum size.
5. A sink 18" x 36" is recommended for the classroom.
6. Student tables 24" to 30" wide and 5' to 8' long are preferred over individual student desks.
7. Other facilities needed in the classroom are: a minimum of two steel filing cabinets, a large magazine rack, a teacher demonstration table, and a teacher desk.

B. THE FARM MECHANICS SHOP

1. The shop should contain as much floor area as possible. The teachers felt that 1800 square feet should be the absolute minimum for the shop. However, shops with floor areas of 2100 to 2500 square feet or larger are highly desirable.
2. The shop floor should be made of concrete and should be free from posts or other roof supports within the shop floor area.
3. The shop should be a minimum of 36 feet in width.
4. Adequate lights (either incandescent or fluorescent) should be provided

in order that bench-type work can be done anywhere in the room.

5. Both 115 and 230 volt current outlets should be present in sufficient number to provide easily accessible current sources anywhere in the shop.
 6. The outlet and receptacle for the electric welder should be located near the large door.
 7. Water—both hot and cold, should be provided in the shop.
 8. The large shop door should be 12' x 10' or larger in size. Many of the newer shops have 14' wide doors.
 9. Wall space should be provided for tool panels near the area in which a particular type of work is to be done.
 10. A tool and supplies storage room should be provided.
 11. A minimum of 16 work stations are needed but 24 or more are highly desirable.
 12. Toilet and locker facilities should be located in or near the shop.
 13. A sink 18" x 35" should be provided.
- Let us inspect two of the newer facilities provided for vocational agriculture departments in Pennsylvania, which have most of the desirable recommended features needed by modern departments. (See illustrations below.)

United Joint High School, Indiana County, Pennsylvania

Some of the outstanding features of this lay-out are:

1. The storage yard. This 40' x 60' area is enclosed by a 7½' fence made of corrugated asbestos - cement sheets or roofing. Other materials could be used just as well. One side or a 25' x 40' area is paved with concrete. This provides additional work area during nice weather. A shed or sheltered storage is provided along one side of the storage yard 16' wide and 35' long. Partially completed shop jobs can be stored here as can lumber, metal, and other supplies.

2. The greenhouse. Not every department will need or should have a greenhouse. However, departments located in truck gardening areas will find a greenhouse quite essential.
3. The conference room or office. Why not have a private room for student-teacher conferences? The trend toward increased emphasis in individual instruction in vocational agriculture suggests that such a room be provided.
4. The classroom laboratory. This work area is excellent for conducting laboratory tests in soils, milk, etc. The laboratory also serves a dual purpose in that teacher demonstrations can well be performed here before the whole class.

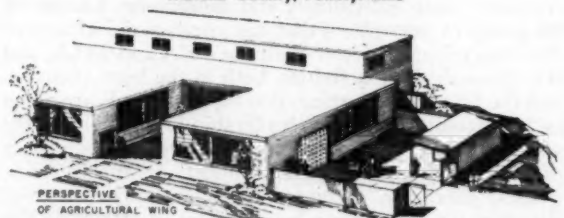
Unionville Consolidated School, Chester County, Pennsylvania

The vocational agriculture classroom lay-out at this school is one of the finest the writer has ever seen. The large size (24' x 42') provides ample space for plenty of storage cupboards and drawers, and in addition space for a conference room and study group unit at the rear of the room. Windows in the conference-office room provide for teacher observation of classroom and shop activities. Other good features of this plan are:

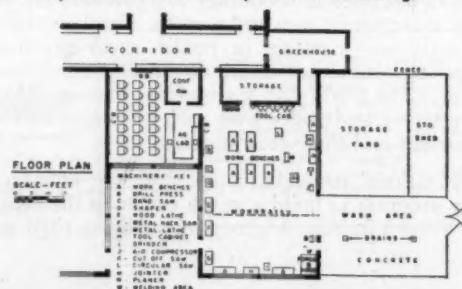
1. Provisions for toilet, lockers, and storage off the shop.
2. The arrangement of benches and power tools in the shop. This arrangement is opposite of that found in the United Joint plan in that in this plan benches are located near the walls and the power tools are located within the shop area. Many teachers favor this arrangement over that shown in the United Joint plan. Some teachers favor a combination of the two.

(Continued on Page 153)

THE AGRICULTURAL DEPARTMENT OF THE UNITED JOINT HIGH SCHOOL Indiana County, Pennsylvania



These facilities were designed by Hunter, Caldwell, and Campbell, Architects, Altoona, Pennsylvania in cooperation with the Indiana County Superintendent of Schools Office and the agricultural Education Department at the Pennsylvania State College.



Teaching under glass

Some departments require special facilities. Described here is one such case.

IVAN HEAD, Vo-Ag Instructor, Alstead, New Hampshire

BECAUSE this area is comprised of many part-time farms and some boys enter the department from town homes, a very diversified course in agriculture must be taught. With this in mind this department had for some time been interested in procuring a small greenhouse for instructional purposes and as a service to the town.

The idea of erecting a greenhouse was brought before the FFA Chapter and approved as an organization project. It was decided that the FFA, rather than the town, should own the building. Working on that premise we needed to decide on a method of financing the project. It was finally agreed that we would attempt a bond issue. The people of the town were approached individually on the subject. Their reception was, almost without exception, very enthusiastic and many pledges were made.

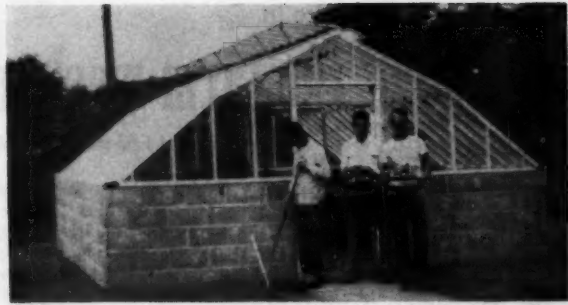
In the meantime several buildings for sale were visited and some greenhouse manufacturing companies were contacted for catalogues and prices. Ultimately the decision was made to purchase a new house since there were none available that could be moved without harm.

In the fall of 1952 the group ordered a "Number 9 Wonder Greenhouse" from

the National Greenhouse Company. We then started work on the foundation. A backhoe was brought in to dig the trench, ready mixed concrete was used for the footing, and a mason hired to lay cement blocks. The students built the footing forms and worked with the mason laying blocks. When the materials for the house came the boys erected it, set the glass, built benches, wired for electricity, landscaped, and laid a walk. In the process they became familiar with all these jobs.

To cover the involved expenses a local lawyer drew up an agreement for us and bonds in \$25.00 denominations were sold. A total of \$975.00 was collected in this way during which time the boys met with only one refusal. This points to the moral that since the school has never asked the townspeople for help except when greatly needed, they respond with money and enthusiasm when the necessity arises.

Issued without security, the bonds pay three per cent interest with no guaranteed repayment date. Each year the trustees, the principal, the FFA president, and the teacher of agriculture will



This greenhouse resulted from cooperative effort to meet a recognized special need.

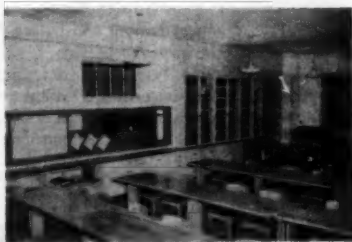
determine how much money can be spared for use in repaying bonds and a certain number of bonds will be drawn by lot for repayment. In addition, the agreement reads that income from the sale of plants will be used only for bond payments and the operating expenses of the house. The money, kept in a separate account, will be handled in this manner until the debt is paid, at which time income will be incorporated into the FFA treasury.

On April 20, 1953, the first of a small crop of tomatoes, cauliflower, and broccoli was planted. All of the students participated in the work of planting, transplanting, and growing. This year 100 dozen plants were sold to students and townspeople. Next season and in coming years the group plans to market 300 dozen, introducing new varieties and hybrids that look promising.

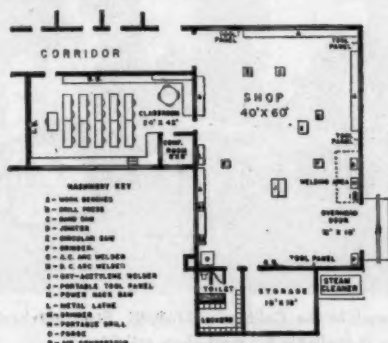
While an undertaking of this sort might well be tried by many schools, a note of caution is in order. If you feel that you are overworked or don't wish to give up any of your social life you should not enter into a project of this type. It means nightly trips to the school plus weekend supervision. Fires go out, the sun gets too hot, and someone forgets to water the plants while your wife or girl friend gets peeved when you have to leave a party early. The only way to win is by the conviction that what you are doing is serving a good purpose and is, therefore, worthwhile. □

Modern facilities for - - (Continued from Page 154)

THE AGRICULTURAL DEPARTMENT OF THE
UNIONVILLE CONSOLIDATED SCHOOL
Chester County, Pennsylvania



This well planned classroom provides bulletin boards, adequate book and material storage space, separate study group unit, and movable tables with comfortable chairs.



3. The steam cleaner. This new shop tool is one of the newer tools being adopted by farm mechanics school shops. This has come about with the increased emphasis in preventative maintenance instruction of tractors, trucks, and farm machinery.

It is generally agreed that facilities alone do not make a good program in vocational agriculture. Many leaders, however, feel that good facilities are an important prerequisite to good instruction. The progressive teacher of vocational agriculture will use every opportunity possible in having his department's facilities keep pace with his program. □

Cover Picture Legend

Pictured on the cover is one section of the Farm Shop at the Rogers High School, Florence, Alabama. This is one of Alabama's model shops with 40' x 60' of floor space. It contains equipment recommended by the teacher training and supervisory staffs in cooperation with a committee of agricultural engineers. Shown in the picture are the electrical, forge and cold metal, and welding areas. Other areas in the shop are arranged and equipped for farm plumbing, wood-working, concrete, tool conditioning, rope and leather, farm machinery, and tractor maintenance. Other pictures of this shop are shown on the back cover of this issue of the Magazine.

Facts that are not frankly faced have a habit of stabbing you in the back.

—Sir Harold Bowden

Planning for the future in

Equipping the farm mechanics shop

CARL F. ALBRECHT, Department of Agricultural Engineering, Michigan State College



Carl F. Albrecht

IN considering the problem of equipping the school farm shop we are immediately confronted with the job of anticipating future needs. If we are unable to quite accurately predict what will be our future needs our shop is doomed to obsolescence before construction begins. There will be changing needs as the years go by and we must be ready to cope with them.

Educational Needs Change

Obviously of first consideration in any long time planning program in vocational agriculture are the educational needs of the farmers in the community. These needs will be based largely on the type of farming in the area. Also involved in planning for the future are an almost endless number of secondary factors such as changing population, urbanization, consolidation, general economic conditions, and many others. All of them affect all the departments in the school and make constant change mandatory in a modern educational system.

This constant need for changes is stimulating but also sometimes discouraging. It is doubtful that there is a vocational agriculture teacher who is not now working with some piece of equipment which he considers temporary in his shop. And he had better be vigilant or the thing will become permanent. In fact, that may be the trouble with a lot of school farm shops. They have remained in "status quo" so far as equipment and space are concerned, and as a result the subject matter taught in them has not kept pace with changing needs.

Planning for the future in equipping the farm mechanics shop resolves itself into two basic problems; namely, (1) determining what equipment is needed and when it will be needed, and (2) arranging to obtain the equipment. To solve these problems we must take several different approaches to them. Let us consider a few aspects of planning which past experience and recent trends seem to indicate will need careful study.

Meeting Local Needs

Almost any list of tools and equipment for school farm shops such as the one prepared in the U. S. Office of Education or in any one of the state education offices is a satisfactory one with which to begin. No matter which list we start with, however, it will have to be modified to meet local conditions. A local community survey may indicate that because horses are no longer used on farms the leather working equipment

should be eliminated or at least drastically cut. In a community in which much native lumber is available it will probably be desirable to invest heavily in farm carpentry equipment. The teacher's lack of training and ability in a certain area of farm mechanics may dictate that it will be wise to postpone the purchase of equipment needed for that kind of work until he can prepare himself to use it. These are examples of adjustments that must be made on the basis of the analysis of the local situations, but there are some general rules for equipping the school farm shop that will apply to most departments.

Large-Type Equipment Needed

The first and basic rule is that we should have in our shop the kinds and sizes of tools and equipment that the farmers in that community have or should have on their farms. For example, while a bit brace with an 8-inch sweep may be satisfactory for general shop it is certainly too small for a farm shop. A 10-inch brace ought to be the minimum and in a complete layout there should be at least one of 12-inches. Most of the claw hammers should be a 16-oz. size, and we could use one or two 20-oz. ripping hammers but only one 12-oz., if any. In other words, our hand tools should generally be big, man-sized ones, rather than the smaller sizes which are usually associated with cabinet work and ornamental metal craft. This is also true of the power tools. We really need at least two portable power drills—a half-inch and a quarter inch size—but if we could have only one certainly we would choose the larger.

Shall We Lead or Follow the Farmer

Obviously we cannot limit our equipment to only that kind which the average farmers in the community have. We must also include the items which they should have and many which they will perhaps have in the future. The oxy-acetylene and the electric arc welders are good examples of this. There are not many farmers who have both kinds of welders and perhaps most farmers in a certain community now have neither. Soon, however, many of them will have one or the other of them and the school shop in that community needs both kinds of equipment in order to be able to meet the immediate training needs of the few who now

have welders and the anticipated needs of those who plan to get them.

Generally speaking, the school farm shop should lead the home farm shops in a community in the variety and quality of tools and equipment, but it may sometimes be better to follow the farmers' lead in certain items. The portable power saw is a good example of this. The first of such saws that were placed on the market were extremely unsafe because of poor balance and inadequate guards. They have since been considerably improved but are still dangerous pieces of equipment to have in the school shop or, for that matter, in the home farm shop. But farmers are buying them in increasing numbers and therefore it is our responsibility to teach our students how to properly and safely use them.

Changing Emphases Mean Different Equipment

Recently the practical, vocational value of some of our time-honored farm mechanics skills has been questioned. "Are we unnecessarily spending time on rope work?" "Just how much sheet metal work and soldering do farmers actually do?" "How about forge work?" Perhaps we can eliminate some items from our master list of equipment and use the money for other more vitally needed tools and equipment.

A changing emphasis on farm mechanics skills needed by farmers would imply some change in kinds of tools and equipment needed. Most farm boys learn to drive a tractor long before they enter high school. Therefore, the ninth grade and not the eleventh or twelfth is the place to begin to teach tractor operation, safety, servicing and protective maintenance. And surely with more steel being used on farms now we need fewer carpentry tools and more metal working equipment than we did twenty years ago. Every teacher will find situations like this in his community.

Planning Present and Future Purchases

After a complete list of needed equipment has been prepared there remains the final step—that of obtaining the tools and machines. With school budgets as limited as most of them are this is no easy matter.

(Continued on Page 155)



A class at work in the California, Missouri, Farm Mechanics Shop. Ample space is available for most shop activities.

Added functions require space facilities.

The third room

A need in serving out-of-school personnel

GLENN Z. STEVENS, Teacher Education, Pennsylvania State College



Glenn Z. Stevens

"THE rooms in this area will serve the needs of our expanding community adult education activities," the young superintendent of schools explained as he pointed to the front main-floor wing toward the center of town. He was showing the blueprints of

the new school building to visitors from the University. As he proffered folding chairs in his small temporary office in an old frame dwelling, Superintendent "X," whether intentionally or not, was inviting comments.

A significant mental comparison was inevitable. How different was this picture of a community where adult citizens had shared in the planning of their new public-education facilities to contribute to their own continued development, as well as that of their children, from the typically narrower vision of a generation ago. How often one has walked into older buildings where the only door, other than those of an inadequate office and rows of uniform classrooms, was one carrying the imposing yet forbidding designation of "Board of Education."

Space for Out-of-school Groups

In the modern concept of adequate housing for a complete program in vocational agriculture, a third room for agriculture is every bit as essential as are the rooms for general adult educational purposes referred to above. Young and adult farmers will make frequent use of a room easily accessible to them during daytime hours. Stopping at the high school on their way home from the morning trip to town to deliver milk at the receiving plant, or from a shopping trip for farm supplies, can be an ideal time for a committee meeting, a problem-solving conference with one of the agriculture instructors, the use of soil, seed moisture, milk or other testing equipment, or for help with farm-mechanization or work-simplification changes.

While one or both instructors are busy teaching high school groups in the agriculture classroom and in the farm-mechanics shop, there are also many times when one or several high school students can very profitably work on FFA committee activities and on their individual farming programs in the combination conference-laboratory-library-office, the area which is here being called the third room.

The idea proposed is based on the point of view that even though there is need for office and filing space, need for

a departmental library, need for functional, up-to-date laboratory facilities, and need for a conference table, all of them can best be provided in one common area. A democratic attitude of self-directed, mutual acceptance of responsibility by farmers for their own community program is promoted.

Space According to Function

Instructors may conclude, and justifiably so, that the functions outlined can be performed in an existing two-room agriculture department. Where this is now being done, the farm-mechanics-shop space is adapted to serving a majority of the informal small group and individual instructional needs during the school day. Just as many teachers have found that farm machinery and equipment maintenance and repair activities are especially well suited to the progressive development of more comprehensive young and adult farmer phases of complete programs, they have found that out-of-school persons appreciate the friendly, informal atmosphere of being welcome in their working clothes any hour of the day and on the evenings when the instructors regularly are there.

Recently, at a county-area career-day conference a fine group of FFA seniors were discussing their progress toward establishment in farming. They were far advanced and mature in their thinking and quickly stated that their guidance needs did not include an interest in information about attending college. They steered the small group-discussion to an outline of ways and means of continuing to use their own local vocational agriculture department through the young-farmer program.

It was clear that they had a real insight into the objectives which their agriculture instructor had developed in

his long tenure in their community. It requires no stretching of imagination to realize that such very progressive plans for a broad community adult-education program as those which Superintendent "X" proudly exhibited for the High School building were profoundly influenced by the complete program in vocational agriculture which the farmers of the area had come to know. □

Equipping the - -

(Continued from Page 154)

There are three ways to get equipment:

1. Some might be obtained as gifts or at very nominal cost from other agencies.
2. Some equipment can be built in the shop.
3. Most tools and equipment will have to be purchased.

Equipment such as benches, tool cabinets, and storage racks can be built by students in the shop classes. This, however, can be justified only to the extent to which the students can develop needed skills. At present there is practically no equipment offered as gifts such as there was after World War II. So we must plan to obtain most of it by purchase.

A Plan for Systematic Purchase

Both the teacher who is starting a new shop and he who is reorganizing an established one are usually confronted with the problem of having to limit purchases to keep within a prescribed annual budget. This means setting up a longtime plan which will accomplish two vital objectives. First, it must present to the administration, at the very beginning, a complete list of all of the tools and equipment needed and, second, it must provide a priority order in which the items are to be bought.

The following sample list illustrates one way in which this might be done. Listed under the heading "Items Needed" would be all of the tools and equipment needed to do a complete job now and in the foreseeable future. This is the Master List. The remaining columns indicate the priority needed by years by showing when each item is to be bought. For

(Continued on Page 157)

Farm Mechanics Shop Equipment List

Items Needed	Now on Hand	Date to be Purchased	1953	1954	1955
Grinders:					
1—Pedestal 12" x 2" x 3/4"	0	1			
1—Portable 4" x 3/4" x 1/2"	0				1
3600 RPM					
1/3 HP Motor					
1—Sickle 4 1/2" Diam.	0			1	
2—Tool 7" x 1" x 5/8"	1				1
1/3 HP 3600 RPM					
Hammers:					
6—Carpenters 16 oz. Curved Claw	2	2		2	
1—Finishing 12 oz. Curved Claw	0				1
2—Ripping 20 oz. Straight Claw	0	1			1

A little ingenuity plus knowledge of needs equals - -

Improved facilities in the farm shop

J. R. HAMILTON, Teacher Education, Mississippi State College



J. R. Hamilton

"A workman is no better than his tools." This old adage long accepted by skilled tradesmen may very well apply to teachers of farm mechanics. Much of the instruction in farm mechanics must necessarily be a learning-by-doing process;

therefore, the facilities needed to do the various jobs under study should be the minimum equipment acceptable by the teacher of farm mechanics.

War production training classes for adults and veterans classes showed the vocational teacher that adults will respond to farm mechanics training when adequate shop equipment and organized instruction is provided. No "crystal ball gazer" is needed to predict the future in regard to the need for more and better instruction in farm mechanics. The American farmer literally "farms on wheels" today, with the promise of more mechanization in the future. More and more school officials ask when hiring a teacher, "Is he a good shop man?"

All this points up the need for a long range program of improvement in the school facilities. Suppose the average teacher looks over his shop with a critical eye for improving the arrangement, appearance and quality of what he now has. The remainder of this article will be a brief resumé of basic improvements made in the Agricultural Education Department farm shop at Mississippi State College by trainees under the direction of the writer.

To improve the appearance of the shop, all equipment, including tables, cabinets, walls, etc., was color conditioned according to the best authorities



Fig. 1. Re-bracing farm shop work benches. Many of the work benches in farm shops have horizontal braces near the floor which make sweeping under them very difficult. The horizontal braces have been removed from the work bench shown here and replaced with diagonal strap iron braces. Diagonal braces make a sturdy bench, and at the same time the sweeping problem is minimized.

on this subject. The work tables had been constructed with horizontal braces near the floor, making a veritable "trash trap." As illustrated in figure 1, these braces were replaced with a diagonal style to facilitate cleaning and sweeping. Quality of work and class morale were immediately improved as a result of this improvement in shop appearance.

A universal complaint by teachers is that small hand tools are almost impossible to keep. Pictured in figure 2 is a cabinet designed and constructed so that only one particular tool will fit into a place for that tool. Almost four-hundred graduates and undergraduates have used these tools without a single loss.

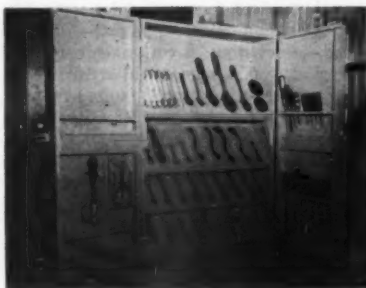


Fig. 2. Miscellaneous small hand tool storage cabinet. The tool cabinet shown in this picture provides a storage place for each tool. The important characteristic of this cabinet is that only one particular tool will fit in each storage space. Therefore, at the end of the shop period the cabinet can be inspected at a glance and if a tool is missing it can be located before the students are dismissed.

As a step toward specialization of various sections of the shop for certain kinds of work, cabinets were designed to house the tools and equipment needed for each kind of work. An illustration of this type of cabinet is the sheet metal cabinet in figure 3. Other cabinets in oxyacetylene welding, tool fitting, cold metal, etc., were constructed and installed in appropriate areas. This ar-



Fig. 3. Specialized tool storage cabinet. The sheet metal tool cabinet shown in this picture has a place for each item, as well as a red identification mark to correspond to the red strip on the inside of the cabinet door.



Fig. 4. Mounting for farm shop anvil. Mountings for farm shop anvils are a problem and the mounting shown here is suggested as a satisfactory solution. One-half of an old oil drum filled with concrete makes a firm anvil mounting; yet it can be moved by tilting and rolling it on edge.

range ment greatly reduced traffic in the main tool room and increased efficiency of the shop.

The design and construction of permanent mounts for certain pieces of equipment as anvils, vises, and grinders present a real challenge to the shop teacher. Illustrated here are several projects which appear to be permanent. For an anvil base half an oil drum was filled with concrete with anchor bolts properly placed while the concrete was green. Straps across the corners hold the anvil in place, figure 4.

Whole oil drums, figure 5, were used for the bases for vises. The bottom two-thirds of the drum was filled with ballast and the remainder filled with concrete. A pattern of the base of the vise (Continued on Page 157)



Fig. 5. Mounting for combination pipe and machinists vise. Satisfactory mountings for heavy duty bench type vises are a problem in many vocational agriculture farm shops. Mountings should be sturdy and located so as to facilitate work. The mounting pictured here is suggested as a solution for this problem.

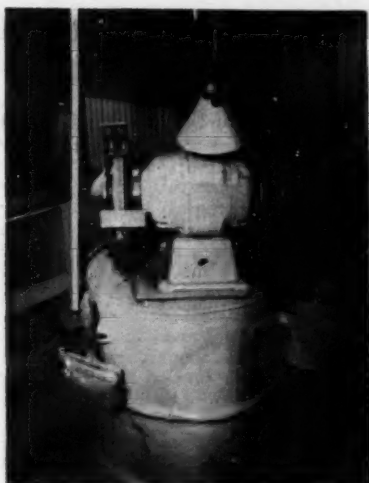


Fig. 6. Mounting for electric grinder. It is believed that a sturdy mounting will lengthen the life of any power machinery. Therefore, the mounting shown in this picture is suggested as being a very satisfactory arrangement for an electric grinder.

was drawn on cardboard so that the bolts could be placed to match the holes in the base. An oil drum was similarly used to provide a mount for a heavy duty grinder, figure 6. Accessories used most often were mounted on the drum. Quiet operation and long life of the motor should be the result of this project. The need of a drum type sander and wire brush machine prompted the design and construction of a fourth type of permanent mount, figure 7. By making a vertical cut in the drum part way down, a shelf for a mandrel as well as one for a motor was provided. All of these projects were painted to fit into the color scheme of the shop equipment. Switches were welded to the sides of the drums.

Repair and construction of modern farm equipment requires a great deal of heavy drilling. An old discarded post drill, figure 8, was mounted to a channel beam anchored in an oil drum filled with concrete. A pulley of the proper size to

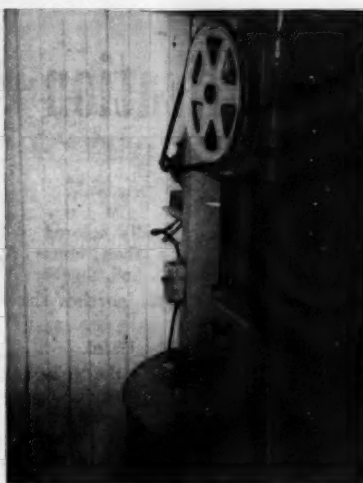


Fig. 8. Converted hand post drill to power driven post drill. This old hand post drill can be converted to a power drill that will be a big asset to the shop program.

make the drill operate at one hundred and twenty-five RPM was installed. Holes may be successfully drilled up to one and one-half inches. The automatic feed on the old drill works well with power.

The need for having the oxyacetylene equipment movable prompted the construction of the cart pictured in figure 9. A few pieces of scrap metal and a pair of discarded wheels made up the materials needed.

Welding rod deteriorates rapidly when exposed to moisture. An air-tight container was constructed from half an oil drum by welding on hinges for the lid and tacking on rubber from an old inner tube for bushing, figure 10. Rods may be stored for several months in this container.

None of the projects described in this article represented much cash expense.



Fig. 9. Cart for acetylene welding equipment. In vocational agriculture farm shops welding jobs occur all about the shop, and at times some of the heavier jobs are done outside the shop. Therefore, some means of transporting this equipment is essential. The cart in this picture can be constructed in the shop at a small expense and it will satisfactorily serve the purpose.

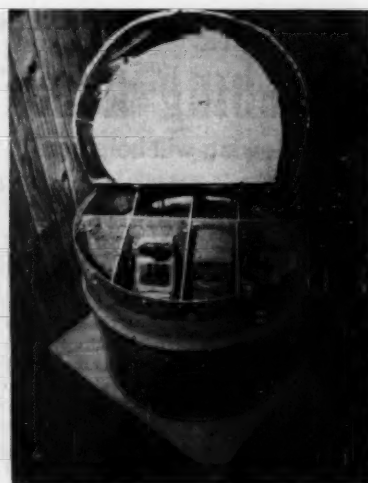


Fig. 10. Welding rod container. The container shown here is neat, fairly simple to construct, and practically moisture proof and air tight. Since many vocational agriculture farm shops do not have satisfactory storage for welding rods, this container is being suggested.

The work was done by trainees in their teacher-training courses in farm mechanics. Students were rotated so that each would spend about ten per cent of his shop practice in shop improvement projects. The enjoyment derived from teaching farm mechanics will be greatly increased as the shop facilities are completed by the students. □

Equipping the - -

(Continued from Page 155)

budgeting purposes it would help to include in this list a column for the price of each item.

Summary

In order to meet the educational needs of the farmers in the community equipment must be bought to do the farm mechanics jobs that farmers in that locality do or should do. The equipment should be the kind that farmers have or should have in their home farm shops. It should be large-type. The school shop needs more and better equipment than the home farm shop, and the former should be the leader in having most kinds of equipment. School farm shops are not intended to be "fix it" shops. More emphasis should be placed on servicing and maintenance than has been the case in the past, and this means a change in tools and equipment needed.

The purchasing of tools should be so planned that the administrators know in the beginning what will be needed to fully equip the shop. If all of the items cannot be purchased at once an order of priority of purchase can be developed so as to assure the early purchase of the most essential items.

Doing these things will help to insure a school farm shop that is equipped to make it possible for the student to develop the skills and abilities he needs to make a beginning and to advance in the farming occupation in this mechanized age. □



Fig. 7. Mounting for drum sander. The drum sander attachment can be removed and other pieces of equipment, such as grindstone, used. For these reasons the piece of equipment shown here is suggested.

If your program of instruction includes - - -

Teaching home beautification

The following will help you

DON HADLEY, Vo-Ag Instructor, Ohio City, Ohio



Don Hadley

VOCATIONAL agriculture teachers may find in the following outline suggestions for teaching home beautification as an improvement project.

The teacher's objectives in this study are to lead students to see the esthetic value of beautiful farm premises; to see that improving a farmstead artistically is no more difficult than improving it unattractively; to develop appreciation of various types of farm architecture and landscapes; to find responsibility in caring for their own farm premises according to good rural landscaping principles; to see the commercial value of beautiful farm premises; to learn that farm beauty is not necessarily in proportion to the amount of money spent.

The pupil's objectives might include the following points: to conduct a "farm clean-up week"; to recognize "uglies" and decide which must be made inconspicuous; to identify land contours and decide which improvements best suit each landscape; to plan to "capture" sunsets and other natural beauties; to learn to use form, line, color, and decoration.

Starting the Unit

In introducing a study of home beautification, have the boys search out both pleasant and unpleasant passages in recent short stories and novels which describe farm premises. Display before-and-after pictures from farm and garden magazines. Have each pupil inspect at least three farm premises, one of which is his own, and (1) write a private report of the "uglies" which he thinks can and should be remedied, and (2) list the farm beauties which he thinks should be restored or retained.

Content Outline

- (1) Very brief history of farm architecture in the U. S., contrasting it with that of other countries as to building materials, plan, location, appearance.
- (2) Farm building sites: Hilltops, rolling valleys, mountain crests, plains.
- (3) Adaptation of architecture to countryside: rambling house on or near hill crest, steep roofs, and peaked gables on mountain side; comparatively low house with horizontal lines predominating on plains.
- (4) Location of farm buildings on site:
 - (a) Farm house remains center of interest. This will call for barns and

outbuildings less vividly colored and farther from road than house is, screened with hedges and shrubbery.

(b) Windows and porches have pleasant views.

(c) Drainage is healthful.

(d) Hitch-hikers and the noise and dirt of traffic not to intrude. Driveways bordered by hedges, aid privacy.

(e) Larger and taller houses retain dignity by proper distance from the road.

(f) Decoration of farm house expresses character through simple lines and sincere ornamentation, sturdy construction, generous proportions.

(g) Farm grounds harmonize with rural setting. To achieve this, avoid too elaborate and artificial planting scheme and too formally terraced grounds. Frame the house as a picture.

(5) Estimate costs of making farmsteads more attractive and compare with increased value of property.

Manner of Teaching

Excursions and Field Trips.—On the first excursion, the pupil writes a report on "uglies." After the second excursion, he revises his report. Other trips might be to pastures and woods to identify and tag wild shrubs and trees which could be profitably moved for student's future use in home beautification projects. Similar trips may be made to nurseries, gardens, flower shows.

Construction Work might include home beautification and plant-culture scrapbooks; clean-up squads to aid busy farm wives; making a curving flagstone walk; models of appropriate landscapes, displayed so parents could see them.

Creative Work should be fostered by students' making a collection of plans and ideas for beautifying the farm home; designing gates and fences; or preparing publicity (news copy and posters) for "farm clean-up week."

Group Discussion would be encouraged by reports on interesting information in garden and farm magazines, government bulletins, and pamphlets.

Outcomes to be expected include:

(a) Attitudes: To make and keep the farmstead attractive, to cherish the farm as an ideal place on which to live.

(b) Habits and skills: Drawn-to-scale maps, unaided research, easy recognition of many plants and trees, recognition of farm and architectural types.

(c) Interests: To visit beautiful forests and farm estates, to find new attractions for their homes.

(d) Appreciations: Of parents' work in homemaking, beauty in home surroundings, of student's responsibility toward his home. □

Public relations in Vo-Ag

J. C. ATHERTON, Teacher Education, University of Arkansas

CREATING and maintaining good will is an important matter in the daily life of a teacher of vocational agriculture. It is a truism that success in every phase of our program hinges upon our abilities to work with and through the community. This is especially true since activity on the home farm is an essential element in our teaching. We should not imply, however, that parent-pupil-teacher cooperation is not essential also for success in the classroom. We are all aware that it is vital because too often the teacher is "too close to the woods to see the trees," and the parents are too far from them. Therefore, neither has the proper perspective of the whole job and a cross-fertilization of ideas is imperative.

Building Public Interest

The public may not always be interested in vocational agriculture as a whole or of certain aspects of the program. It seems safe to assume that part of this lack of interest is the product of a lack of knowledge. If the people generally are to understand and accept the program in vocational agriculture, they must have the necessary facts. To bring about this understanding we are faced with the problems of presenting the facts to the people and also of organizing this material in meaningful form so that its significance can be readily grasped. Presenting bare facts to the people is not enough. The facts must be comprehended if they are to have the desired results. For consent of the people as well as their cooperation is largely dependent upon an understanding of the situation and upon their ability to see the worthwhileness of the project.

Long range planning seems essential for a comprehensive job of public relations. Included in this project are intermediate goals and guides for action which should be formulated cooperatively. Attention must be given to following paths which will lead to the desirable ends we wish to secure. Means are as important as the final goal.

Public relations seeks to bring about a harmony of understanding between the department of vocational agriculture, the school, and the public in general. This good will is essential if the department is to thrive and to do the job needing to be done with those in the community who are interested in agriculture. Publicity or interpretation alone will not do the job. Good will may be brought about as a result of activity under conditions which are designed to bring about the desired ends. Emphasis should be placed upon the positive approach to public relations. This will include the building of such a program in human relations in all our activities that good will is the natural by-product of them. In this the teacher of agriculture will be a member of the school-community team through which genuine cooperation in planning and in executing the plans becomes the rule and not an exception to it.

(Continued on Page 161)

Some advantages and disadvantages of - -

Separate buildings for Vo-Ag departments

GEORGE W. SLEDGE, Graduate Student, Michigan State College



George W. Sledge

SHOULD the facilities of vocational agriculture be located in a separate building or not? As numbers of all-day, young and adult farmers gradually and steadily increase, many local community representatives face this important question. It is not the intent

here to answer this question by a simple yes or no; however, there are several important questions and considerations that should be discussed preceding a person's decision on this matter.

Only after the "pros and cons" have been weighed, evaluated, and studied carefully should a school board and others make a definite cooperative decision. We should ask ourselves:

- (1) Will a separate building contribute to the attainment of our objectives in vocational agriculture?
- (2) Does a separate building in any way help to develop proficiency in farming? If so, in what ways?
- (3) Will a separate building increase the effectiveness of the program?
- (4) What effect will a separate building have on the vocational agriculture program, the teacher of vocational agriculture, agricultural students and others?
- (5) Are the physical needs such that they cannot be incorporated in the main building?
- (6) Are the costs of construction and maintenance of separate buildings greater or smaller than for comparable space in a central school building?
- (7) Do the advantages outweigh the disadvantages?

In order to partially answer these questions, let us look at some of the ad-

vantages and disadvantages of separate buildings for vocational agriculture departments.

Disadvantages of Separate Buildings

1. *The teacher-administrator relationship may be partially impaired.*

When a physical separation of buildings occurs there may be a separation of the teacher from his administrator involving the control and operation of the building for vocational agriculture. Provided the teacher and the administrator understand their duties and responsibilities toward the total school program, this possible conflict would be eliminated.

2. *There may be a loss of student time and student inconvenience.*

Loss of time between classes may occur when students are required to go to and from a separate building. This is partially determined by the physical distance the vocational building is from the main school plant.

Weather conditions in winter may make it inconvenient for students to add or change clothing before and after each instructional period in agriculture.

3. *There might be an effect on the teacher of vocational agriculture.*

The teacher of agriculture may be viewed by other teachers as someone apart from them, someone who does not share their views and concerns because he is removed from the contact of their problems. Some may envy his separate position and lack of direct administrative control. These criticisms in practice are actually unjustified. Others may say that a separate building may create laxity on the part of the teacher if the administrator fails to supervise the program personally. This negativism can be eliminated also by the conscientious hard-working teacher of vocational agriculture.

4. *Communications between the central office and the office of the teacher of agriculture may be overlooked at times.*

The teacher of agriculture should be kept informed of conferences called, meetings to be attended, and other pertinent information. Precautions must be taken that a teacher located in a separate building receives such information when other teachers are informed.

5. *Cost of building and maintaining a separate building must be considered.*

With the aid of responsible builders a school board could easily determine if a separate building would be too expensive from the standpoint of building materials, heating systems, plumbing, fuel, janitorial services, etc. Separate buildings would necessitate increased janitorial services.

Advantages of Separate Buildings

1. *A separate building for vocational agriculture permits expansion of facilities (classroom, shop, laboratory, etc.) as they are needed since separate vocational buildings generally are not structured as a large school plant. Similar to this point is the amount of flexibility afforded in a building. An agriculture building should be constructed to allow for maximum flexibility as a program develops and as the needs for different types of instruction may fluctuate.*

2. *Separate buildings eliminate or greatly reduce the possibility of class interference by students and staff members. However, a building should be accessible to student and staff and others as well.*

3. *Separate buildings eliminate the possibility of distractions for other classes that may come from power driven equipment and other normal work noises.*

The "hum of the shop" is desirable for students in the shop where learning activity is occurring, but the "hum" to the busy vocational agriculture student becomes noise to another student attempting to learn and apply the binomial theory.

4. *The teacher of vocational agriculture, vocational agriculture students and others have a greater sense of pride in a separate building.*

There is an unconscious feeling that vocational agriculture is a distinct part of the total educational program of the community school.

5. *Separate buildings may lend them-*
(Continued on Page 163)



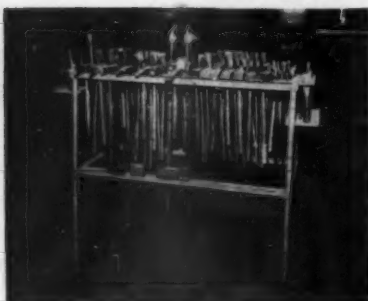
Vocational Agriculture Building, Double Springs, Alabama containing 40' x 60' farm shop, large classroom, office, storage rooms, restrooms and showers.



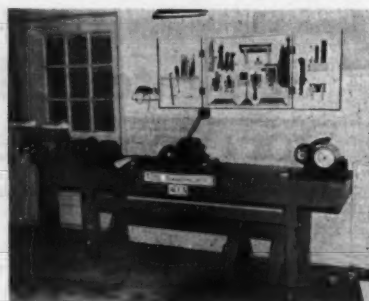
Part of the agricultural classroom, Double Springs, Alabama. Pupils may take more pride in rooms in a separate building. Pride can lead to habits of neatness.



A cabinet containing the necessary tools for repairing farm machinery and tractor maintenance. Its location should be near tractor area.



A rack containing blacksmith tools. This rack is a handy outfit for many tools and is also handy in moving them from one place to another.



This tool-sharpening area is designed to sharpen the tools used on the farm such as mower blades, saws, axes, hoes, swinging blades, chisels, plane irons, etc.

Efficiency in teaching may depend upon - -

The practical use of space

In the farm mechanics shop

D. N. BOTTOMS, Teacher Education, Alabama Polytechnic Institute



D. N. Bottoms

SPACE is of major importance in arrangement of equipment in the farm mechanics shop to meet the training needs of all-day, young and adult farmers.

Since farms have become highly mechanized, there is a greater need for space utilization in farm mechanics.

Larger shops have been built in many communities to meet local needs and teachers in old buildings are making better use of the limited space they have.

It is desirable for the farm mechanics shop to have 2,500 square feet of floor space, which will accommodate 20 to 25 students. Optimum working conditions exist when there is 100 square feet of floor space per student. Both small and large shops will be discussed in this article.

Many shops are cluttered with undesirable objects, some being finished and unfinished projects of poor workmanship. Power equipment, in some

instances, is worn or broken beyond repair. Scraps of lumber, pipe and iron on the floor should be stored in a definite place. Too many out-of-date, poorly constructed workbenches hinder a good farm mechanics program. Limited space, poor facilities and arrangement are causes of many undesirable situations.

Work Areas Needed

To best cope with the above mentioned needs and situations the farm mechanics shop should be arranged in work areas in which to perform definite jobs.

Where space is limited, areas may be combined where tools are interchangeable; for instance, areas for sheet metal and electricity, forge and cold metal, or farm machinery repair and tractor maintenance.

In many shops tools and equipment are inadequate to establish all areas. Progressive teachers, in cooperation with school officials, are adding new equipment each year until required areas are developed.

General recommendations for work areas in the shop are:

Main Tool or Supply Room.

1. Tools for general use should be displayed on a panel of sufficient size. Small tool rooms should have no shelves as these discourage proper placement of tools by students.
2. In large tool rooms, shelves may be built on one side for supplies and surplus equipment.
3. Some departments use a separate room for large supplies, teaching aids, samples of different teaching materials, etc.

Lumber Rack.

A vertical lumber rack is satisfactory and will conserve space. A rack 2' x 2' wide with upright sections of 4', 6' and 8' is adequate for the average farm shop. If the ceiling is low, a 45°-60° rack, 2' x 2' with upright sections of 4', 6' and 8' can be used.

Sharpening Tool Area.

This important area should be placed in a section of the shop with sufficient light. A table 2' x 8' placed against the wall with a wet grinder, buffer, a grinder for sharpening mower blades and one for grinding plane irons, chisels, drill bits, hoes, axes, etc., is sufficient. A small cabinet should be placed over the table containing equipment for sharpening various tools used on the farm.

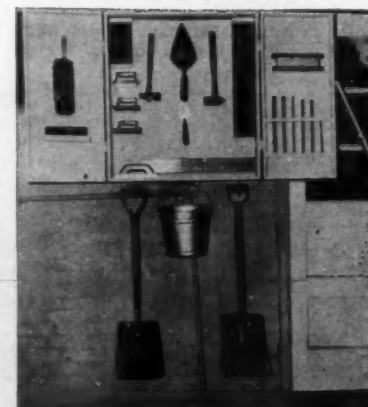
Power Tool Area.

It is best to locate power equipment such as the planer, circular or radial arm saw and jointer between the main tool room and the woodworking area. Group the equipment in a triangular or diagonal shape for safety and convenience. Locate the planer next to the wall with the circular saw at one point of the triangle and the jointer and radial arm saw back to back at the other point of the triangle. The points of the triangle should be 8' apart. Another plan is to begin next to the wall with a planer or radial arm saw and extend out at 45° with equipment placed every 4'-6'. The radial arm saw can be placed against the wall if sufficient space is available. The center of the shop, near the large doors should be left open for repair, adjustment of machinery and tractor maintenance.

Woodworking or Carpentry Area.

Locate this area near the back of the shop or the farthest point away from the large doors. Being near the power

(Continued on Page 161)



The tools for doing concrete work in this cabinet are located near the large door of the shop. It makes it convenient for doing concrete work outside on a concrete slab.



Are welding booth.

tool area makes for convenience in woodworking and larger related projects. Three woodworking tables, 3' x 6' size with vises on alternate corners, is sufficient for this area in a large shop. Place these tables 3' to 4' from the wall and 3'-4' apart. Provide three wall cabinets containing sufficient hand tools for three to four boys per cabinet. In small shops, use tables 2' wide and 6' long placed against the wall with a vise on each outside corner. This provides more space in the center of the shop. Most woodworking designed for farm mechanics shops will not be bench work but will be on saw horses, and other space conserving facilities.

Arc Welding.

Place the arc welder in the corner of the building on either side of the large door. Use a fireproof curtain, a folding portable screen or a permanent wall to prevent injury while welding. With the welder near the large door it can be used to weld large machinery or other equipment on the outside. A 12" x 12" opening in the wall near the welder will allow cables to extend for outside welding. In small shops this arrangement may be advantageous.

Concrete Slab on Outside of Building.

A concrete slab 20' x 30' outside the shop can be used for cleaning, repairing and painting machinery and other projects. Either connect the slab with the shop floor or set off a few feet. Place a convenience outlet of 120 and 240 volts in one corner of slab for a portable hand grinder, power spray, welding, etc. This slab is very useful for both large and small shops. A fenced-in graveled area for storing farm machinery is needed.

Electricity.

Locate the electrical area along the wall next to the sheet metal area since some of the tools in these areas are interchangeable. A workbench 3' x 6' with convenience outlets on each side is essential in teaching farm electricity. Place a wall cabinet near the bench for storing electrical equipment. Store the electrical panel under the cabinet or in other convenient place while not in use.

Farm Plumbing.

For teaching farm plumbing provide a workbench 3' x 8' with a pipe vise placed on one end. A portable pipe vise is essential when doing practical work on the outside. Use a wall cabinet near the table or on an "A" type portable panel for displaying and storing equipment. Locate this area anywhere along the wall near other metal areas.

Concrete.

The only inside space necessary for a



A panel of tools placed in the main tool room—neatly arranged and well balanced.

concrete area is space for a wall cabinet and two square-point shovels. All laboratory work can be done on the shop floor, the outside slab or in the field.

Oxyacetylene Welding Station.

Place the acetylene and oxygen tanks on portable trucks in a small area near the outside door. Do not use too close to arc welding or a forge because of fire. A small cabinet could be used for extra equipment and supplies.

Rope and Leather.

Use a wall cabinet containing the recommended equipment and supplies for doing rope and leather work. Most any wall space in the shop will be suitable. It is cleaner near the woodworking area. Tables similar to those in other areas can also be used in this area.

Farm Machinery Repair and Tractor Maintenance.

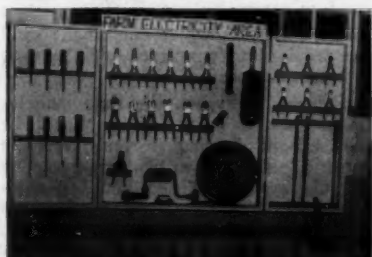
The concrete slab is good to use for this area. Place a wall cabinet containing the necessary tools for this work in a convenient place. This should be one of our most important areas.

Forge and Cold Metal Work.

Forge and cold metal work can be done to some extent in the same area. Provide a wall cabinet for cold metal tools. Hang the forge tools on a portable rack. Make available a metal table with several machinist vises to use for forge and cold metal work.

Miscellaneous Items.

Place the drill press preferably in front of a window to obtain sufficient light and avoid obstructions. The ideal situation is to have a drill press for wood and one for metal located conveniently in that particular area. The grinder, other than ones used in sharpening tool area, should be located against the wall in the area used most. This may be near the welder for convenience in preparing metal for welding, etc. If there are columns in the shop, the grinder, bandsaw, stationary sander and such equipment can conveniently be placed here. Locate the first-aid kit near the tool room over a small table. □



A cabinet containing tools for teaching farm electricity.



Tools for sheet metal work. A place for each tool.

Public Relations - -

(Continued from Page 158)

Media for Promoting Good Will

The public must share in many of the learning activities of the department if the teacher is to assume the role of guide and not that of dictator. It is the responsibility of the teacher of agriculture to improve the "we" concept in vocational agriculture by uniting pupils, parents, and teacher in meeting the educational needs of children and adults. This feeling of oneness comes about through the conscious effort of the teacher in his day-to-day contacts and work in the department. It is not a haphazard affair nor one that can be achieved through a single act or through sporadic efforts.

Financial support of a program in vocational agriculture is largely brought about and maintained by parties who know the program and who believe in it. Recent efforts to reduce federal appropriations were stymied by congressmen and others who have been led to see the value of this effort to our national welfare. This fight for funds emphasized the fact that public interest—constructive interest—in vocational agriculture is essential. It brought about an awareness that knowledge of the program and an understanding of it is a must so that there may be a well informed and sympathetic public supporting our program.

There are numerous media through which we may build support for an understanding of our program by both in-school personnel and the public in general. The teacher should utilize a variety of these such as:

In school

1. Take an active interest in the affairs of the school.
2. Attend and participate in faculty meetings.
3. Do a reasonable amount of the "extra" duties at the school.
4. Bring the school administrator and the faculty in on planning and evaluating the work of the department.
5. Ask for what is needed to carry on an effective program and utilize efficiently those facilities which are provided.
6. Maintain loyalty to the school, the administrative staff, and the faculty.

In the community

1. Face to face contacts with people of the community
2. Farm visitation.
3. Participation in civic affairs of the community.
4. Group meetings.
5. News articles.
6. Adult programs of education
7. Radio programs.
8. Participation in fairs, shows, and contests.
9. Parent-son banquets.

In fact, every activity in which we engage can have public relations value, either positive or negative.

"Sound public school relations must be honest in intent and execution, intrinsic in the school program, continuous in application, positive in approach, comprehensive in character, sensitive to the public concerned, and simple in meaning and conception."¹

¹Public Relations for America's Schools, 28th yearbook, American Association of School Administrators, 1950. Page 17.

.....Let there be light

In the farm mechanics shop

GEORGE W. WIEGERS, JR., Teacher Education, University of Tennessee

FREQUENTLY teachers of vocational agriculture are criticized for not carrying out the controlling purpose of the Smith-Hughes Act and the many procedures for achieving such a purpose.



G. W. Wieggers, Jr.

Too often the fact is overlooked that the same Act specifies that the "State or local community, or both, shall provide the necessary plant and equipment determined upon by the State Board." The plants and equipment actually found in local communities would

indicate there are many interpretations of the word "necessary." There is also evidence to indicate that some State Boards have not fulfilled a responsibility of providing suggestions or prescribing essentials for vocational agriculture buildings and equipment. Teachers know from experience that they must have something to work with, not unlike farmers in this respect, in order to do an efficient and effective job of teaching vocational agriculture. Some teachers have left their jobs because conditions were deplorable. The writer has visited in many departments which have been a part of the local school systems for several years. In some of these situations it appears the local communities have assumed little or no responsibility for carrying out their end of the bargain of providing adequate buildings and equipment. For the most part, teachers of vocational agriculture in these situ-

ations have done exceptionally well considering what little they have had to work with.

Need for Light

This presentation is limited to only a part of providing the necessary plant, namely that which is concerned with lighting. It is not a discussion of what is, but rather specific suggestions on what *should be*. Lighting is essential to a good farm mechanics program. The nature and complexity of the work carried on in the shop requires that the learner be able to see well what he is doing. The sense of vision is one of the student's most valuable assets. It is rated by insurance companies on a par with hands and feet as a means of earning a living; on any other basis it is priceless. In order for the student to learn farm mechanics effectively he must be able to work in a satisfying environment. Two factors are of importance in providing adequate and effective lighting. The quantity (number of foot candles) and source or quality of illumination must be considered. In attacking the problem of lighting, one is concerned with natural lighting, artificial lighting and color of interior surfaces. They are interrelated and therefore must be considered in planning for good lighting.

Natural Lighting

Natural lighting usually doesn't cost anything except the installation of windows, replacement of panes when broken and washing of windows. Just any provision for permitting natural light to pass through windows will not always be adequate in terms of modern standards.

In general, the window area should equal sixteen to twenty per cent of the floor area. If this percentage is decreased, more artificial lighting will be needed. A shop forty feet by sixty feet would require between three hundred eighty-four and four hundred eighty square feet of window area. ($40' \times 60' = 2400$ sq. ft. $\times 16\% = 384$ sq. ft.; 2400 sq. ft. $\times 20\% = 480$ sq. ft.)

The tops of the windows should be as near the ceiling or plate as possible. For this reason it is desirable to have the distance between the plate and top of the glass not more than six inches. Ordinarily, the bottom of the

glass should be approximately twelve inches above the wall benches in order to prevent the glass being broken by students at work. The window sills should never be less than forty inches from the floor.

In order to provide wall space for tool or wall cabinets, it is desirable to leave not less than three feet between each two windows or three feet between each group of two windows. It is not desirable to have a continuous unbroken line of windows on the side of the shop. Windows should be located on the two sides if possible. Windows may also be located in one end. Properly located and spaced windows will supply approximately ten foot candles of natural light.

To determine the number of windows needed in a shop, the following procedure may be used. (See Figures 1 and 2.)

Given:

1. Shop is $40' \times 60'$
2. Distance between plate and floor is $12'$
3. Window area is to be 20% of the floor area
4. Window width is to be $4'$
5. Distance between plate and top of window is to be $6"$
6. Distance between floor and sill is to be $42"$

Calculations:

1. Square feet in the shop: $40' \times 60' = 2400$ sq. ft.
2. Window area needed: 2400 sq. ft. $\times 20\% = 480$ sq. ft.
3. Wall space above and below window: $6" + 42" = 48"$ or $4'$
4. Height of each window: $12' - 4' = 8'$
5. Area of each window: $4'$ width $\times 8'$ height = 32 sq. ft.
6. Number of windows needed: 480 sq. ft. $\div 32$ sq. ft. = 15 windows
7. Linear feet of window area: 15 windows $\times 4'$ width = 60 ft.

Steel sashes with pivoted or hinged ventilating sections are desirable. They permit more natural light to enter and are more durable than wooden sashes. It is desirable to have lower panes of the windows translucent to help minimize glare and distractions from the outside.

The window sills may be sloped to prevent them from being used as shelves and the objects from cutting out light.

Artificial Lighting

In constructing a new shop, thirty to forty foot candles should be provided in each work area. After the bulbs and globes or reflectors have been in use for some time, the maintained level will probably be approximately ten foot candles less. Adequate lighting should be provided to permit use of the shop on dark days and at night.

Proper lighting in the shop includes more than intensity. Light should be diffused and distributed evenly over the work areas. Shadows and glare can be avoided by well-diffused light and properly placed sources of light.

It would simplify the job of determining the number of watts needed if foot candles could be translated into watts.

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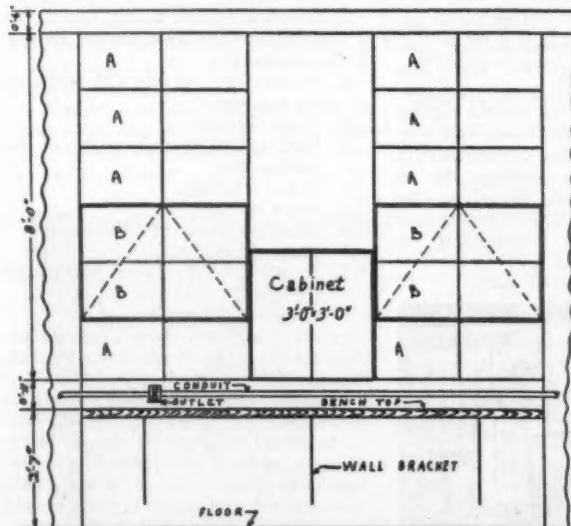


Fig. 1. Vertical placement of windows. Window sizes: $4' \times 8'$. Pane sizes: A = $23\frac{3}{4}" \times 15\frac{1}{2}"$. B = $22\frac{3}{4}" \times 14\frac{1}{2}"$.

The relationship between wattage and foot candles is affected by numerous factors and cannot be reduced to a reliable formula. At best only a rough approximation can be used. Sufficient light can be provided in most situations if three to five watts per square foot of floor space are well distributed throughout the work areas. If fluorescent bulbs are used in place of incandescent lamps, reduce the wattage by one-half. A shop forty feet by sixty feet would require seven thousand two hundred watts if three watts per square foot were provided. ($40' \times 60' = 2400 \text{ sq. ft.} \times 3 \text{ watts per sq. ft.} = 7,200 \text{ watts.}$) Twenty-four 300 watt incandescent bulbs would provide the seven thousand two hundred watts. ($7,200 \text{ watts} \div 300 \text{ watts} = 24 \text{ bulbs.}$)

In determining the location of lighting units the following "rule of thumb" may be used.

1. The maximum distance between lighting units should not exceed the height of the plate or ceiling (a closer spacing is more desirable).
2. The maximum distance between the wall and first row of lights should not exceed one-third the height of the plate or ceiling.

A shop forty feet by sixty feet would require twenty-four 300 watt incandescent bulbs to provide three watts per square foot. Four rows of six bulbs per row will carry out the "rule of thumb" on location of units. (See Figure 2.) Each row should have a separate switch. Many teachers of vocational agriculture prefer fluorescent to incandescent lighting. The use of early types of fluorescent lights was discouraged because of danger of accident due to the stroboscopic effect. As a result a turning saw blade appeared to be standing still. The "flicker" in lamps caused such an effect. Reduction of flicker in lamps now available makes them highly desirable in shops. The use of white fluorescent lamps is preferred to daylight white. Adequate fluorescent lighting approaches good daylight. Such lighting has fewer shadows than incandescent lighting and usually only one-half as much wattage is needed.

There are times when fixed sources of light do not provide adequate illumination for certain types of work in the shop. Portable light units can be used to advantage in the farm power and machinery area.

Color of Interior Surfaces

The interior surfaces of the shop should be painted with colors that reflect as much natural and artificial light as possible and yet be free from brightness differences and glare. It has been found that colors have both a psychological and physiological effect on an individual.

A relationship exists between color and these factors: safety, sanitation, efficiency, morale, vision, interest, fatigue, monotony and comfort. Therefore, the use of colors should not be a "hit or miss" proposition, because many individuals over a long period of time will be affected by them.

Walls. Both natural and artificial lighting should be taken into consideration when selecting colors for shop walls. If windows are located on only one side the lightest colors should be used on that side, the darkest colors opposite the windows and intermediate colors on the end walls. The lower part of walls may be painted a darker color than the upper walls to minimize soiling. Shades of semi-gloss eye-rest green may be used satisfactorily in painting shop walls.

Ceiling or Overhead. The color of the ceiling has much effect on light reflection. As the amount of natural and artificial light decreases, the lighter the color the ceiling should be. In most shops white or egg shell white is desirable, while in other shops a pale tint of green, blue or gray may be used.

Floors. The purpose of painting concrete floors in the farm mechanics shop is to increase light reflection and to facilitate cleaning. Concrete floors that have been used for some time should be etched before painting with a ten per cent solution of muriatic acid (one part hydrochloric acid to three parts water) for three or four hours or until it dries. This will increase durability of the paint by preventing its peeling off. Coat the floor with at least two applications of paint. The floor needs a darker color than most wall and ceiling colors because of soiling. Battleship gray is preferred to red. □

A Happy New Year To All Our Readers

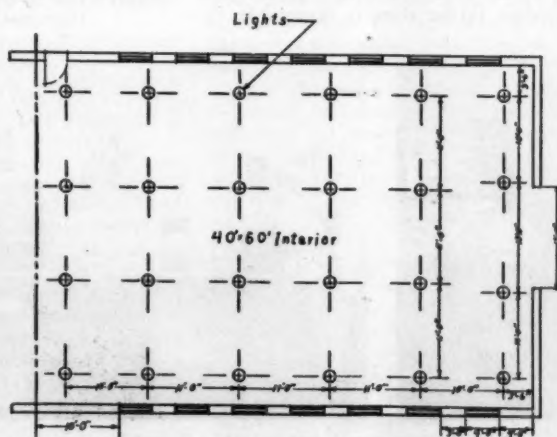


Fig. 2. Placement of light units and horizontal spacing of windows.

Separate buildings - - -

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selves better to allowing farmers and students to bring in large agricultural implements such as combines and tractors for repair and instruction concerning them.

A building properly located in relationship to the main buildings and recreational areas would permit greater safety on the school grounds. Farmers consulting the teacher of agriculture or attending instructional programs during the day would be free to "go and come" without fear of conflicting with the school program.

6. Separate buildings provide conditions for a unified arrangement for the vocational agriculture classroom, conference room, chapter room, storage facilities, shop and laboratory facilities that may not be possible in the central school plant.

An integrated building and its facilities are conducive to a better and more integrated instructional program if handled properly. Facilities integrated in a separate building reduce the "running around" for the teacher of agriculture when supervising and instructing class, shop, and laboratory activities. If planned properly, a separate building may lend itself easily to assuming an agricultural atmosphere. Natural lighting and adequate ventilation probably should be given consideration in discussing the possibility of separate buildings.

7. A separate building might, in cases, eliminate heating a large central school building during winter months when adult and young farmer classes are meeting most regularly at night.

Only the agriculture building need be heated comfortably for such occasions. This could aid in decreasing the cost of fuel supplies necessary for school operation. The significance of this item would be greatly reduced in the modern school plant heating system which permits heating individual units of the total school plant.

In Summary

The vocational agriculture building, under the direction of a competent, congenial teacher of agriculture conducting a program which meets the needs of the community would become a symbol of unity and progress for agriculture in the community. Since the vocational agriculture program is a vital part of the total school program, a board of education and the school administrator in consultation with the teacher of agriculture should cooperatively consider a separate building for vocational agriculture. Whether the advantages outweigh the disadvantages depends on the particular school situation and the prevailing conditions. The individual community must study its needs and decide on the particular program that meets its needs, then consider building facilities. Therefore, the question of separate versus the central building is resolved as a problem only by the particular local community. □

Facilities are important in the preparation of teachers

Campus laboratory whips intangibles

CARL G. HOWARD, Teacher Education, New Mexico



Carl G. Howard

THE idea and ideal of an agricultural education laboratory on the college campus, where ideal conditions for teacher training may exist, is something which most professors of such work toy with at intervals—and do nothing about.

Postwar growth caused most colleges to scratch around a lot in order to find enough classrooms to handle the GI influx. The need of a tremendous amount of equipment and printed material which is too heavy to carry to classes and too voluminous to put on library reserve has caused much thought by teacher trainers throughout the country. In many western institutions temporary CCC or army structures have been made available as classrooms. A combination of circumstances made possible and practical an agricultural education laboratory on the campus at New Mexico A & M. Student labor, plus a very small amount of money, an old C C Camp barrack in a good location on the campus, plus a little vision and planning did the trick. Later developments and new groups of students have made many alterations and improvements and the end is not yet in sight. Rafters had to be reinforced, new sleepers put in, foundation covered, a new roof put on, building paper and chicken wire nailed on the walls, and the whole stuccoed, with windows reframed and painted and a new door framed and hung. The whole took about three weeks when it finally got going. There was a group of thirteen students so that some could work on the inside while the others did over the outside. Heat, an air conditioner, floor sanding and shelving had to be done before inside furnishings could be put in. The two cuts show much of the inside arrangement.

Nearly all studies about successful teaching tell us about the importance of good housekeeping and the appearance of the department, students and the teacher. These are important to the student teacher when he ultimately gets out on the job. The teacher trainer is faced with an almost impossible task when he attempts to set up class work about these nebulous things, which will be found different wherever the student goes to work. Such an attempt is impractical, too.

Environment Makes a Difference

But the laboratory can do much to teach these principles by indirection. When students spend one to several hours a day for a year or more in constant contact with certain near-ideal conditions they will unconsciously adopt some of the ideas involved and make them a part of their philosophy. This will, naturally, make their conduct on the job a little different from what it would have been without these influences. One cannot wade through the manure of a barnyard without getting some on his shoes.

What are these indirect values and how are they set up and how may they be of value in training teachers of vocational agriculture? Here are some of the things I believe our agricultural education laboratory has "taught" our students. 1. Student participation in housekeeping; 2. Knowing physical appurtenances—hence having a place for all and keeping them there; 3. Doing a finished job throughout; 4. Using many motivation devices; 5. Maintaining a "several purpose" room—reading room, study, library, meeting room, classroom, recreation room, laboratory, darkroom, projection room, and committee room; 6. Doing major construction and repair jobs; 7. Making appearances attractive; and 8. Arousing student interest in appearance.

Experiences Are Varied

By the use of the work-organizer each student in the class is responsible for

certain duties in our laboratory. He must sweep and dust and keep in order everything in the laboratory for one week out of six. Next week he must notice the outside appearances of the laboratory and its surroundings and irrigate, fertilize, mow or cultivate grass and shrubs and dispose of unsightly things for another week. He spends another week checking to see that light, heat, and ventilation are adequate for the work being done. For still another week he must do something about any repairs or upkeep which need attention. And in his final week on the schedule he must find a place for new materials and see that all are put on the inventory. He must also check on the items in the inventory to see that all are in place and none lost or strayed.

When students see an instructor straighten crooked pictures, re-arrange mimeographed material, dust shelves, put things away carefully without undue loss of time, they gradually realize that everything has a place and should be in that place when not in use and that the whole room should present a satisfying and pleasing appearance. In other words, a premium may be placed on perfectionism if everything is carried that "very little bit more" to entire fruition so that a finished job results throughout.

Here are some of the things which impress the students: Good color arrangement so that it is pleasant to work in the room, all built-ins painted and closed, blackout shades well hung with brackets to eliminate all unnecessary light, a finished job on all furniture and shiny varnished floors.

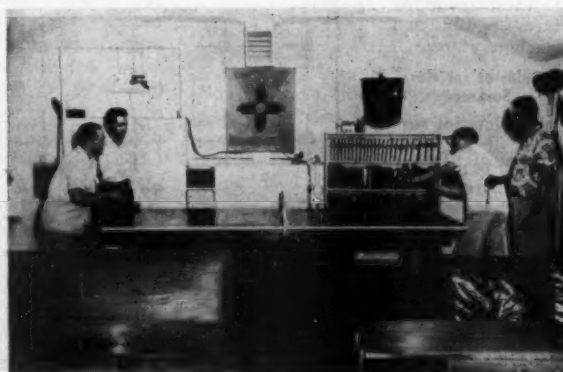
Our laboratory at New Mexico A & M can become a projection room in seconds. This allows free use of slides, strips, movies, and the opaque projector. Chart cabinets and hangers allow easy use of charts and graphs. Within minutes a dark room for developing, printing, enlarging and drying of pictures may be done in an evening's work. The "Illinois matching board," a put-together FFA emblem, framed pictures and a couple of divans allow motivation, FFA practice, and make catching up on one's loafing a real possibility.

Each of our advanced student groups uses, the laboratory in making "dry-runs" of jobs to be taught at training centers. Here all the motivation material

(Continued on Page 165)



The campus laboratory becomes a projection room with a minimum of change. Note space for teaching materials.



Recreation meeting space for organizations and entertainment are not overlooked.

may be and is required to be used. Supervision of study, decisions, planning and the like are practiced till some proficiency is reached in each.

Responsibility Given to Students

The shelves in the laboratory are full of material collected for over thirty years, most of which could not be replaced at all, if lost. As each advanced group makes an entirely new inventory, all students learn what is in the lab, find out where it belongs, and develop an interest in keeping it there. Each student has a key and may work or play any time of the day or night when he won't interfere with the needs of others. Here is a set of regulations drawn up by the students themselves to govern the use of the laboratory. Quote:

"This room is a combination reading, study, recreation, Alpha Tau Alpha meeting and work material depository room, which was made over, decorated, and designed by and for Agricultural Education students. Keys are provided all men when they register for Ag Ed 181 which they may retain until they leave the campus. All these advantages carry with them certain responsibilities to compensate for the privileges the college has provided us in allowing us free and sole use of it's property and ours. We have, as a result, set up for our own government the following suggestions for its perpetuation:

1. "Janitor" work will be done as indicated on our "work-organizer," daily.
2. Other chores in general will be done as shown in the same place.
3. Everything in the room has a place. Keep it there when not actually in use.
4. Ash trays are provided for smokers. Use them.
5. Keep feet off furniture.
6. In the evening when the "clean-up squad" has already done its work for the day clean up your own mess before leaving.
7. Keep door locked and closed. The air conditioner should not be turned on without water and the two rear windows partly open and the door closed.
8. Study should take precedence over recreation.
9. When non-members are invited in, the member inviting them is responsible for them and should stay with them until they leave.
10. Keys should be used by owners only.
11. Members should be prepared for visitors at all times; clothing, ladies, language, etc.
12. Whenever you are the last to leave the laboratory see that lights are out, windows closed, air conditioner and water turned off and the door locked.
13. Leave blackout shades to committee who knows how to handle them.
14. Everything here is *OURS!* Let's Keep it *SPOTLESS!*"

Recreation Space Provided

Students smoke, play ping pong, visit, and work in the laboratory without a curfew, closing hours, or silence restrictions or no smoking signs. Material may not be taken from the laboratory,

Displaying and filing agricultural periodicals

An answer to a problem faced by every teacher

GUY E. TIMMONS, Teacher Education, Michigan State College



Guy E. Timmons

MANY teachers of Vocational Agriculture experience difficulty in finding a suitable magazine display and filing system. Plans and more plans have been developed for the "ideal" storage-file or display rack, yet most racks prove to be unsatisfactory in use.

One of the better ideas experienced in display-filing of farm periodicals for ready reference and use is the vertical-diagonal suspension plan. A quarter inch hole is punched in the upper left-hand corner of the magazine, approximately three-quarters of an inch in from the marginal edges. A single hand hole punch, one capable of punching through $\frac{1}{4}$ " to $\frac{3}{4}$ " thickness, can be purchased from school supply houses or agricultural supply concerns for this purpose. The periodical is then suspended on a three-quarter inch cup hook. The hooks may be placed from 10 to 12 inches apart. In spacing, the size of a given periodical should be taken into consideration so as to conserve space and for esthetic reasons. A good spot for these hooks to be attached is under the chalkboard ledge or in a similar protected area. The chalkboard area in the average classroom will accommodate all

the magazines usually found in a vocational agriculture department. A name-plate bearing the name of the magazine to be suspended on the particular hook can be placed to the immediate rear of the hook, so as to insure the replacing of the periodical in its proper place.

In use, it is recommended that only the current issue and the issue preceding the current one be placed on the hook. Older issues may be taken care of in one of two ways. Appropriate article titles may be card indexed and the few select articles to be saved for further reference can be cut out. These articles might be filed in a suitable source unit and/or might be pasted in a scrapbook type of reference. Such a scrapbook reference might be made up for any given area such as swine, dairy or the like. The card index serves as a guide for ready reference to a given article.

Magazines, especially the larger less rigid type, can be kept in neat order and appearance. The chalkboard or other similar ledge affords protection so the magazines will not become torn. With reasonable use, the holes remain and do not become torn. Such a means of displaying and filing helps to create attractiveness in the classroom, lends agricultural atmosphere to the room, places the magazines where they can readily be seen and used, gives encouragement for their being replaced in the proper place after use, and is perhaps the most economical of all display and storing devices. □

as no one knows when someone else may need to use it.

The Alpha Tau Alpha chapter at New Mexico A & M college uses the laboratory as a meeting room, committee room and initiation room. Facilities are provided for the use of the new ritual in the form of a permanent, lighted Alpha Tau Alpha symbol. This is also used at regular meetings. The New Mexico state flag covers the symbol when it is not in use.

Each advanced group is expected to do some construction, renovation or repair on the laboratory. Past groups have added the following: color redecorating, the ATA symbol, the blackout shades, the work-organizer, a put-together-FFA-emblem, the ping-pong table, cabinets of various sorts, and complete floor renovation twice a year.

It is pleasant to work in pleasing surroundings and one develops a sense of need for the kinds of housekeeping that in turn develops housekeeping ability.

Perfectionism and organizing abilities are fostered and strengthened by the agricultural education laboratory at New Mexico A & M and most of this is done outside of class time, with the "teacher"

gone, and with whole hearted student participation. Our particular stucco job is the best on the campus, according to the building superintendent, because of student labor and their interest in doing a finished job. This is all the more impressive because New Mexico is a land of stucco houses.

In addition to the physical appearance of the laboratory, inside and out, there is one more step in indirect teaching here in New Mexico. The professor in charge of the vo-ag teacher training program feels that the student is entitled to a daily change of scenery too. So, during the regular school year, he never wears the same clothing for two consecutive days in a row, and keeps at least three complete changes rotating all the time. (Note: during hot weather, which is very noticeable in southern New Mexico, this takes the form of slacks and sport shirts only.) The reason for this: Can't you recall the "teacher" in one of the elementary grades who wore the same brown and green dress from the opening day of school till Christmas or until it fell off her—and had a black and red one for the rest of the year?

(Continued on Page 167)



Farm shop instruction being carried on in a modern vocational shop Canton, Mississippi.



Instruction can be more effectively conducted in a modern classroom—Utica, Mississippi.

Our needs are changing for . . .

Buildings, rooms and equipment

For vocational agriculture

TROY V. MAJURE, District Supervisor, Utica, Mississippi

THE vocational agriculture building in any community should be adequate to meet the agricultural education needs of the people in the community. It has been found that the most desirable type



Troy V. Majure

of building for vocational agriculture is one that is used exclusively for the teaching of vocational agriculture. Many of the vocational buildings in Mississippi have been built in conjunction with the home making department; that is both departments are housed under the same roof. The State Department of Education, Vocational Education Division, has developed combination plans and also separate plans for a vocational agriculture department. When a school is approved for vocational agriculture the local school is required to provide a building according to the plan developed by the State Department of Education. Pictures accom-

panying this article will illustrate, in part, ideas presented.

The vocational agriculture building should have a class room, office, shop space and adequate storage facilities to take care of the needs of the department. The classroom should be well lighted, heated, and adequate space should be provided for filing bulletins, teaching materials, magazines, laboratory equipment and supplies of various kinds. In other words the student should have a favorable situation in the classroom to carry on his supervised study in the

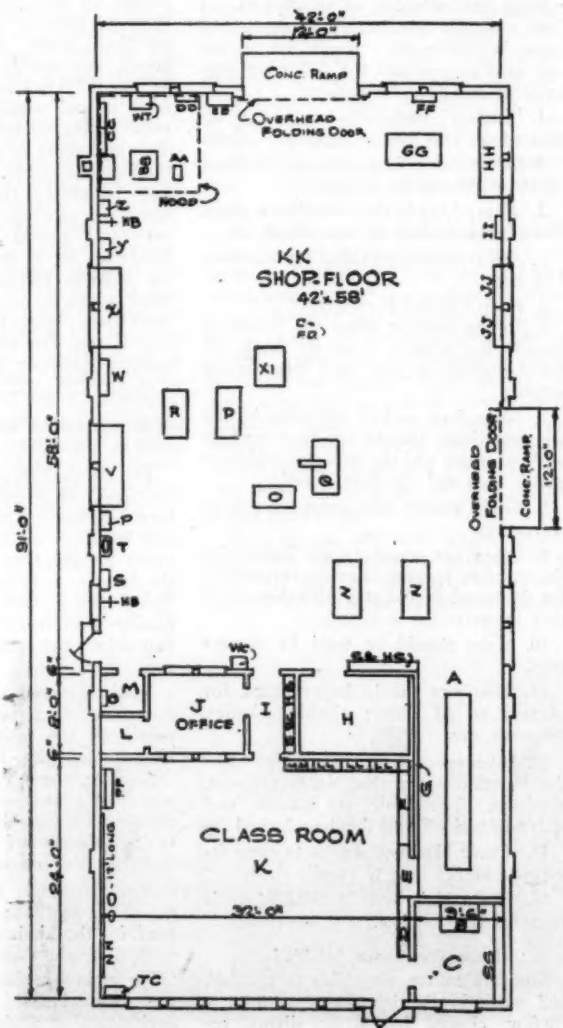
most efficient manner. In the past, too many times, the agriculture department has been placed in a corner of the basement, or some other undesirable, poorly lighted and poorly ventilated room of the building. This situation has been corrected almost entirely due to the fact that vocational agriculture has proved its worth and the people have accepted

(Continued on Page 171)

LEGEND FOR FLOOR PLAN

A—Lumber Room and Rack
B—Chart Rack
C—Store Room
D—Book Case
E—Visual Aids
F—Mimeograph File Cabinet
G—Racks for Bolts and Nuts
H—Tool Room
I—Hall
J—Office
K—Class Room
L—Store Room
M—Toilet
N—Wood Work Bench
O—Band Saw
P—Planer
Q—Radial Arm Saw
R—Jointer
S—Medicine Cabinet
T—Wash Basin
U—Towel Rack
V—Sheet Metal Bench
W—Sheet and Cold Metal Cabinet
X—Cold Metal Bench
Y—Drill Press
Z—Tool Grinder

AA—Anvil
BB—Forge
CC—Forge Cabinet
DD—Electric Welding Cabinet
EE—Electric Welder
FF—Leather Work Cabinet
GG—Leather Work Bench
HH—Tool Fitting Bench
II—Tool Fitting Cabinet
JJ—Saw Filing Rack
KK—Shop
LL—Bulletin Rack
MM—Boys Book Shelf
NN—Bulletin Board
OO—Chalk Board
PP—Magazine Rack
XI—Table Saw
TC—Teachers Case
HS—Shelf & Hook Strip
SS—Book Shelves
WT—Welding Table—18"x24"
HB—Hose Bibb
FD—Floor Drain
WC—Water Cooler



Floor Plan—Agricultural Laboratory Building
State Approved Plan for Mississippi

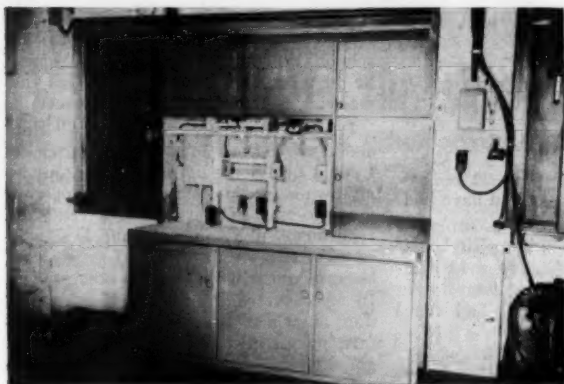


Fig. 2. Studding and rafters are built into the cabinet in replica directly behind the demonstration panel. Here the panel has been removed.

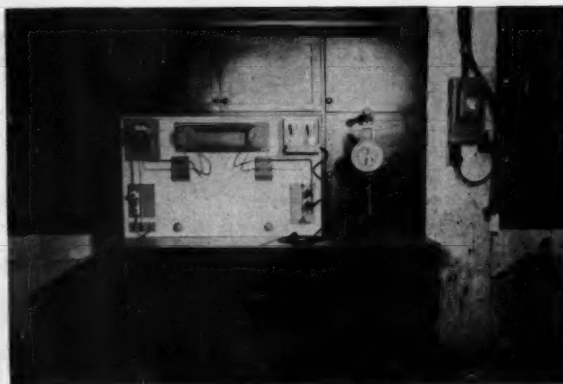


Fig. 3. The demonstration panel shown in place to cover the simulated studding and rafters. Variation in color distinguishes the areas of the work center.

An electrical work center For the Farm Mechanics Shop

RICHARD N. JONES, Instructor, Agricultural Engineering
Dept., The Pennsylvania State College



Richard N. Jones

THE electrical work center is a development of the electric demonstration panels which have been used in several of the states for the teaching of farm electrification. It brings together the demonstration panel, the electrical tools and equipment and the

electrical work bench into one location in the farm mechanics shop.

A permanent electrical work center has a number of advantages over the portable demonstration panel for use in the vocational agriculture program. Some of these advantages are:

1. The boys' electrical problems can be duplicated on the demonstration panel which is always accessible at the center. This enables the teacher to get a better picture of the problem and enables the boys to get a better understanding of the solution.

2. 115/230 volt outlets can be permanently installed and energized, making possible more adequate wiring and source of current than was possible with portable demonstration panels.

3. All electrical tools, equipment, supplies and accessories may be located in the center.

4. Better perspective of an actual farm wiring setup, including meter, entrance wires, entrance panels, 115/230 volt circuits, and simulated rafters and studding for practice wiring, may be given.

5. When not in use, the demonstration panel is not exposed.

6. In addition to serving as a teaching aid, the center provides a place in which the boys' ordinary farm and project electrical jobs may be performed.

The exact dimensions of the work center will depend upon available shop space. A convenient size might be 6' long, 6' high, 2' deep by 32" high at the base and 10" deep above the work bench. (See Fig. 1.)

Studding and rafters are located directly behind the demonstration panel in the center. (Fig. 2.) These studding and rafters enable the teacher to immediately carry the demonstration presented on the panel into the practical stage by having the boys do the actual wiring as it would be done on the farm.

The application of color conditioning in painting the center will draw attention to the part of the center being used at a given time. The cabinet

should be painted the same dark color as other cupboards in the shop. The demonstration panel should be a light shade of the same color and the mounting panels a medium shade. The studs should be treated with a clear wood sealer.

Further information about the center is contained in Progress Report 107, August 1953, The Pennsylvania State College, entitled "An Electric Work Center for the Voc. Agr. Shop," by R. N. Jones, E. F. Olver, D. R. McClay and F. Anthony. □

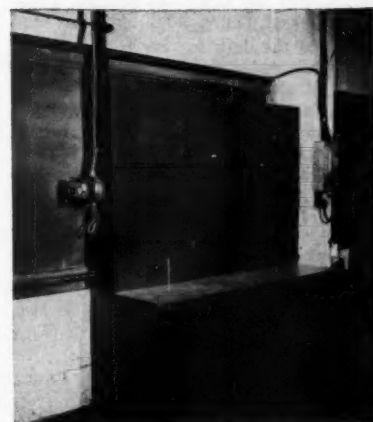


Fig. 4. The work center as viewed from the side angle. All storage space is enclosed.

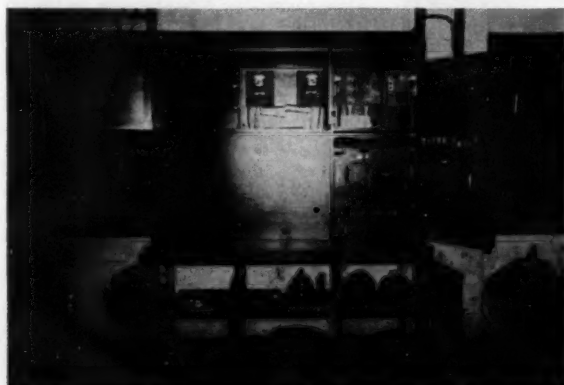


Fig. 1. The electrical work center. Storage space for essential equipment is available.

Campus laboratory - -

(Continued from Page 165)

Whether there is any correlation between freshness in appearance and freshness in thinking or not, a change of pastures is always good for any old cow, even on a good farm or ranch—or in an agricultural education laboratory. □

It is a great privilege to be a great person and each of us can be a great person even though living in a small community and not particularly recognized by those about us. You are a great person as long as you are the factor that keeps the community doing the right thing.

Boys are different

A sequel to "Fiction or Fact?"*

KENNETH L. RUSSELL, Teacher Education,
Sam Houston State Teachers College, Texas

Mr. John Kornsilke
Swineville High School
Swineville, U. S. A.

Dear John:

Your story in Agricultural Education Magazine reminds me of my own experience in Vocational Agriculture, only in reverse. This morning Pop said "Jimmy, I wish you would stay home today and build another farrowing house like the one you made Saturday." Pop



Kenneth L. Russell

means well but he just doesn't see any sense in going to school and spending a lot of time building a hog house in farm shop when I can build it just as well at home. Mr. Jones, that's my ag teacher, (funny, isn't it, our ag teachers both have the same name)

insists that we build hog houses, gates, self-feeders, and the like in shop. He says that the desk for my room and the end table and magazine rack I want to build for Mom are a bunch of foolishness (furniture-making he calls it). Mom doesn't seem to think so. I kinda agree with Mom. The other day Mom said, "Jimmy, you are just wasting your time in that school shop. All you do is build things for the hogs, chickens and cows, that you can build just as well at home."

"Land sakes," she says, "any farm boy that can't saw some boards in two and nail them together to make a farm gate will never have enough sense to be a farmer anyway."

"I know, Mom," I says, "but the other day when I was practicing making some joints so I could do a real nice job on that end table, Mr. Jones made me stop and help some other boys with a self-feeder. He said I was just wasting my time."

The idea of a farm boy spending all that time studying and drawing a set of plans for a desk and end table and practicing making good joints just isn't practical according to Mr. Jones. What I can't quite get through my head is why the things I want to make in farm shop that require skill are not just as valuable as building gates and hog troughs. Seems to me that any boy that can build a good end table and desk could also build good gates and self-feeders.

Pop came in just about then and wanted to know what happened to the good lumber I bought for the table and desk.

*Agricultural Education Magazine, Vol. 25, May, 1953, p. 262.

"Seems to me," he says, "you have had time to finish them."

Of course, I had to tell him that I had been so busy learning how to weld iron together and working on a hog house for Mr. Jones that I hadn't had time to finish them.

Boy, Pop sure blew his top when I mentioned welding. "Your brother Tom," he says, "might have developed into a good farmer if he had studied a little economics and learned to plan his work instead of all that practical stuff. All he's done since he started taking that veteran's farm course is tinker around with that new electric welder he bought after he had a couple of welding lessons. If he spent more time studying and planning his farming business instead of so much time in that school shop working with those fancy tools, he might be able to pay for his farm."

Of course, what really made Pop blow his top about Tom was his losing about three hundred dollars worth of hay while he was trying to weld a two-dollar part for the hay baler. Tom said he bought the welder so he could repair his own machines. The other day Tom broke a part on the baler and had to drive to town to get some welding rods. (He'd used them all up practicing when he should have been getting that sow ready to farrow. She lost seven pigs that afternoon.) Anyway, after he had gone to town for the rods and repaired the part and gone about three more rounds, the same part broke again in the same place. That meant another trip to town to get a new part.

Pop was mad, not just because of the three hundred dollars worth of hay that got wet that night, but because Tom didn't use enough judgment to get the part fixed by an expert or get a new part in the first place.

Of course, I knew that much. But I wouldn't have known if I hadn't been reading about how to make profitable use of time in a farm management book the other day when I was supposed to be studying how to cut stair stringers for back porch steps.

When I get ready to build a house or barn, I'm going to do the planning and hire a good carpenter for the special jobs. I don't see any sense in learning how to cut rafters and stair stringers. I'll probably flunk agriculture if I don't start learning these practical things. I guess the plans for rearranging Mom's kitchen and building some cabinets would be furniture-making, but that is what I was doing when I should have been learning how to cut rafters.

All this rafter cutting is a bunch of foolishness for small farm buildings anyway. It's just as good to place the rafter boards in place, nail them down and together, and saw off the ends. I learned this the other day while studying some plans for improving the hog

house Pop wanted me to build the day I talked him into letting me come to school. When I told this to Mr. Jones, he just laughed at me, said I was the most impractical boy he had ever seen.

I had project trouble too until Pop and I worked out an arrangement where I could own some livestock and crops in my own name. Mr. Jones talked Pop and me into one of those 15 per cent arrangements like you and your Dad find so satisfactory. That works fine for you because you will stay on the home farm. In my case I didn't see how I was getting anywhere since I'll have to start farming on my own somewhere else. I got the 15 per cent net, if there was any net, but I couldn't see how I'd ever have any foundation stock of my own to start farming. Then, too, we had an awful time deciding just what amounted to 15 per cent. Mr. Jones never did figure that one out.

I sure wish Mr. Jones would let us take part in more contests and spend more time studying parliamentary procedure. The other night I went with Pop and three other men to a meeting to see about buying fertilizer in carload lots. If someone had understood a little parliamentary procedure and cooperation, maybe they could have gotten together on getting the fertilizer, but the meeting finally broke up without anything being accomplished. I wish our FFA would spend more time having good committee reports in its meetings and practicing parliamentary procedure like your Chapter does. If it did, maybe I could have straightened the men out the other night when they asked me what to do about accepting a committee report. One of the men was from a neighboring school and he was surprised that I didn't know my parliamentary procedure like the FFA boys do in his school. Pop was disappointed too and said I might just as well quit school if I wasn't going to learn any more in school than what he had taught me at home anyway.

This year I wanted Mr. Jones to let Bill and Joe and me enter the dairy judging contest this spring, but he said we didn't have time. He said we just didn't have time for contests when we were so busy testing milk and figuring feed costs and the like. Of course, I agree that if a cow doesn't make a profit she isn't worth keeping, but I just can't get it out of my mind that there is some connection between type and good production and that a good dairyman can't depend on production alone in the selection of his breeding stock. I guess I am by cows like I am by girls—I like for them to look good.

Well, this letter is long enough. I've been writing this letter in study hall, and because of it I'll probably get an "F" this quarter. Mr. Jones sent after some boys a few minutes ago to help dig post holes for the fence around the football field. He says that building that fence is a very practical farm job and that it is better than so much book learning. Geewhiz, I've dug post-holes and built good fences all my life.

Sincerely yours,
Jimmy Hayrack
Pigstie, U.S.A. □

Here is an idea you can use - -

A space-saver in the shop

Which combines other advantages

DONALD HANSEN, Vo-Ag Instructor, Lyons, Nebraska



Donald Hansen

WHEN the Lyons, Nebraska Vocational Agriculture classes moved into their new Vocational Building this fall, they were faced with the problem of tool storage. This is no new problem for many schools since a new building often means trying new ideas and

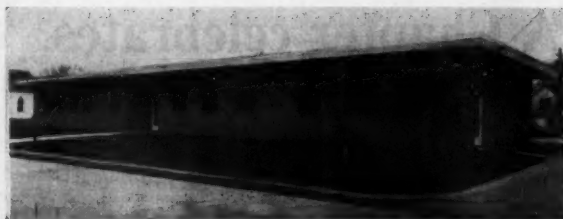
better methods of tool storage.

Since we do not have a tool room and since we wanted all of our equipment as mobile as possible, we used an idea from R. M. Kildee, Vo-Ag instructor at the Fremont, Nebraska, schools. This cabinet provides 96 sq. ft. of tool storage and yet is less than four feet square. It needs only a small amount of floor space and is easily moved from one location to another. It has fourteen spacious shelves and a first aid cabinet. At the bottom of the rack are four drawers.

This cabinet was designed to hold the most often used tools. Wall cabinets are provided for other tools. Tools are held firmly in place by catches, yet are easily removed. Materials needed for the cabi-

net are :

- (1) 2 pcs. pine or fir plywood— $\frac{3}{4} \times 4' \times 10'$
- (2) 3— $1 \times 12 \times 10'$ —pine
- (3) 1— $1 \times 6 \times 18'$ —pine
- (4) 1— $2 \times 4 \times 8'$ —fir



The new Lyons, Nebraska vocational agriculture building.

- (5) assorted screws and finishing nails
- (6) assorted pieces of scrap lumber for trim and catches
- (7) four piano casters

The cabinet is assembled by cutting the two pieces of plywood into pieces 4' by 6', notching the two so that they may be slid together. The 2" \times 4" reinforcers are next notched and assembled to the bottom of the two panels. The floor of the cabinet is then made from the leftover ply or from the pine 1" \times 12". The casters are fastened to the bottom of the rack.

The mounts for the tools are made from small bits of scrap plywood and the shelves from 1" \times 6" and 1" \times 12" material. After sanding, the cabinet was given two coats of shellac, then two coats of a hard plastic varnish.

Advantages of the rack are:

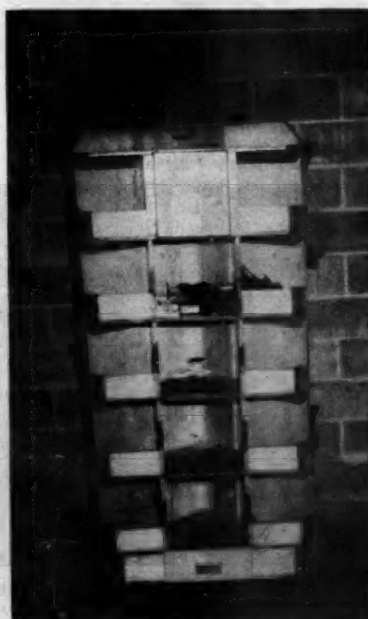
- (1) Can easily be moved to the work area needed.
- (2) Serves the same purpose as wall cabinets, yet more accessible.
- (3) Tool checker can easily determine if all the tools are present since no two kinds of tools are interchangeable in positions on the cabinet. □



Turning the cabinet counter clock-wise we see the storage space for hand tools.



Opposite the shelf-space and adjoining other hand tools is the space for more woodworking equipment.



This view of the mobile unit shows shelf space and first aid cabinet.



The fourth side of the unit completes storage arrangement. Note the drawer at the bottom and the mounting of the casters.

A Chapter celebrates achievements

New Holstein FFA Chapter celebrates 10th birthday

ROBERT F. HEMAUER, Vo-Ag Instructor, New Holstein, Wisconsin

FFA members and their fathers, together with past members of the Future Farmers of America, gathered in the high school gym Saturday night, April 18, to celebrate the tenth anniversary of the organization.

About 250 strong, they gathered around a mammoth birthday cake baked for the occasion to find that they hadn't done badly during the past 10 years. In fact there was much to be proud of. From a humble beginning, with 32 original members and without funds, the Chapter has grown to 83 members with assets of \$1,645. This fails to record the many dollars spent helping fellow members get started in various projects. Right now the Chapter owns four purebred gilts and 19 feeder pigs. The boys obtain foundation stock for a swine herd enterprise from the Chapter.

They Are Winners

During ten years of activity the Chapter has had three American Farmer Degree holders, 27 State Farmer Degree holders, two state organization officers, one star farmer of Wisconsin, one president of the State Junior Dairyman Association, one member elected to the National FFA band, numerous livestock judging winners on the state level, and two members participated in the state speaking contest.

It also had the state championship quartet for four years in a row, 1945-1948. In fact, when the state rules were changed in 1947 to prevent a member on a championship quartet from reappearing in this competition, the Chapter formed a new quartet which won the top spot.

Members of the 1945 quartet were

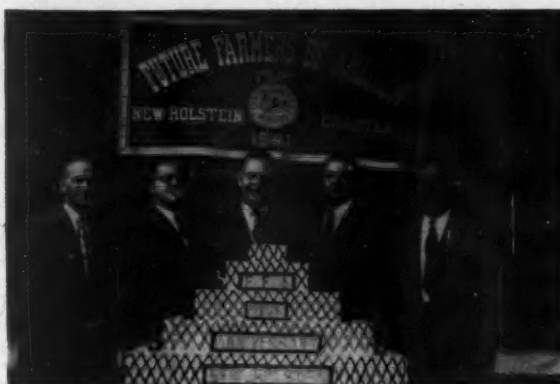
present and were called upon to sing "The Hiking Song," one of the songs they sang to achieve victory eight years ago. Singing were Don Vorpahl, Melvin Steiner, John Schmitz and Donald Krebsbach.

The giant cake was baked and decorated by a friend of the Chapter, Mrs. Richard Schmitz of Marytown, Wisconsin. It measured four feet long, three feet wide and stood two feet high. It was decorated in colors of the organization—National blue and corn gold. Some indication of its size is revealed by the fact that 12 dozen eggs and 63 pounds of sugar were used in making it.

Former Members

Robert F. Hemauer, Chapter adviser and vocational agriculture instructor for most of the 10 years, reported on the former members. Since the Chapter was organized, 122 boys have graduated. Of this number, 74 were present at the banquet, 21 are in the armed services, 26 were unable to attend, and one is dead. One of the former members of the Chapter is now a Trappist Monk; another is an undertaker.

L. M. Sasman, State FFA Adviser and Supervisor of all Wisconsin agriculture teachers, pointed out that the boys were not only getting an education in agriculture but "a foundation on which to build an education during a lifetime."



The anniversary celebration was the occasion for cementing relationships between the Vo Ag department, the school, the community and state agencies. Shown from left to right are: L. M. Sasman, State FFA Adviser and Supervisor of Vo Ag; R. F. Hemauer, Vo Ag Instructor; R. H. Dosch, Supt., New Holstein Schools; D. N. McDowell, State Director of Agriculture; and P. Langenfeld, Mayor, City of New Holstein.

First Officers Present

Introduced to the gathering were the officers of the first year, namely, Alfred Keller, President, now a farmer in St. Cloud, Wisconsin; Arthur Weber, Vice President, now doing sales work; Merlin Wieting, Treasurer, an undertaker in Hilbert, Wisconsin; and Lloyd Wirth, Reporter, and Melvin Steiner, Secretary, both farmers in the area.

As the main speaker on the banquet program, Donald N. McDowell, State Director of Agriculture, put it, "I don't know when and where I have seen a more keen, sharp, and sound looking group than you have here tonight. This is the kind of men found in agriculture—New Holstein style. We need rural leadership, straight thinking, and sound judgment. You get it in a group like this." He pointed to the FFA pledge and asked the group to think more about "developing the qualities of leadership and brotherhood." He called the FFA a modern method of training leaders, and he added that while many of the former graduates are no longer in farming, they are interested in agriculture or they wouldn't have returned for the 10th anniversary banquet celebration. □



The mammoth anniversary cake is being cut by Chapter Adviser Hemauer assisted by D. N. McDowell, State Director of Agriculture in Wisconsin. Others in the picture, from the left are Jerome Petrie, Chapter President; L. M. Sasman, State Adviser and Merle Krueger, President of the Wisconsin State Association of FFA. Many former members witnessed the event.



The officers of the chapter are lined up behind the huge cake prepared in the community for the occasion. The cake stood 3 feet high. Officers shown, left to right, are: Jerome Petrie, President; Lloyd Petrie, Secretary; Jerome Theucks, Vice-President; Willard Schmitz, Sentinel; Francis Krutzik, Reporter; and Andrew Pethan, Treasurer.

Tips that work...

Use Wax and Keep Tools Bright

Farm Shop Tools represent an investment made by the people of the community toward the education of their youth and they act as a mirror for the quality of work a teacher of vocational agriculture is doing in his farm shop. Each person that enters a farm shop notices immediately the power tools that are before him. If the visitor stays for any length of time he will also notice the hand tools. These tools, if in good order, and clean and free of rust, make a good impression on the visitor. Dirty, rusty and unkempt tools not only make a bad impression toward the department, but the teacher as well.

Living in the Gulf Coast area, try as I might, I had a hard time keeping my shop tools from rusting due to the damp climate. I first tried using a coat of light weight oil as a rust preventative. This worked pretty well except that it was necessary to apply oil to the tools each time they were used. This meant that if the class was working in farm shop, the oiling of tools was an everyday affair.

The next thing we tried was the use of heavy grease. This worked fairly well except that on tools like the jack plane, power saw, and the like, the grease got on the wood the students were working with and was rather difficult to remove. Also we had the same problem with grease rubbing off the tools, and if the tools were not looked after every day or so, they were rusting again.

Then one day I came upon the idea of using a hard wearing wax to coat the tools and protect them just as my wife uses it to protect her floors. I first experimented with the power saw table top, considering this a fair test for any rust protecting coating. I first cleaned the steel top by using turpentine and steel wool. After wiping off the surplus turpentine, I applied a coat of paste type floor wax. I left this on overnight and the next day the class began using the power saw. I thought the wax would act as a protection against rust, but had no idea it would last nearly as long as it did. That first coat stayed on for three months without any signs of rust starting. Of course, the saw was not used for all of those three months, but was used at least three to five times each week for about two months and then every day for almost one month.

This convinced me on the idea of using wax as a rust protector on any of the metal parts of power or hand tools. We now use paste wax on all metal surfaces of power and hand tools. Wax is also used on the tops of our classroom tables. We think it adds a great deal to the brightening up of our classroom, keeping all the tables shining like new. I think it helps to add a little pride in the boys' minds toward the vocational agriculture program in our school.

There's a little more to this story than just rust prevention and pride. As you all know, a waxed surface creates less drag and friction. This holds true also

to the waxed surface of any tool, power or hand. You will find that the miter gauge on the power saw will slide easier, that the jack plane will be easier to push and that a hand saw will not bind nearly as badly after a good coat of wax is applied to them.

I believe you will find, as I did, that waxing tools is the easiest, quickest and simplest way to end the rust problem with shop tools. Just wax 'em and forget 'em!

Ed. J. Landry,
Vo-Ag Instructor,
Jeff Davis H. S., Houston, Tex.

Buildings, Rooms and Equipment

(Continued from Page 166)

it as an integral part of the total school program in the community.

For a classroom to be adequate, there should be some items of equipment common to all departments, such as:

1. Sufficient blackboard space
2. Tables and chairs rather than arm chairs and desks
3. Cabinets for books, bulletins, charts and other teaching materials such as specimens, samples, etc.
4. Bulletin board
5. Teacher's desk
6. Four drawer filing cabinet (this may be preferred in the teacher's office)
7. Facilities for filing bulletins
8. Space for boys to keep workbooks and other information.

Space for Farm Shop

Since the instruction in Farm Mechanics is an integral part of the program of vocational agriculture it is highly important that adequate provision be made for this important phase of instruction. It has been found that many vocational departments which had adequate shop space ten or fifteen years ago when the department was established, now find themselves in a crowded position since the increased demands of repairing modern farm machinery have developed. In most departments space in a shop less than 2400 square feet is not sufficient. A number of new departments have 3000 or more square feet and find that it is most desirable to have this increased space.

A shop should be arranged so as to facilitate teaching of farm shop jobs in the most expeditious manner. A shop should have adequate storage space for tools, equipment and supplies which are necessary to do the job. The power tools should be located and arranged in a manner to occupy the least amount of space. It has been found that a teacher can supervise his students much more efficiently if he arranges his equipment and facilities by stations and assigns one or

more of his students to these different stations. Some of these may be planned as follows:

1. Wood working
2. Hot and cold metal work, forge work
3. Tool sharpening
4. Welding
5. Leather work
6. Sheet metal work
7. Painting
8. Farm Machinery repair work

Others could be listed. Many teachers prefer a central tool room for general tools, while specific tools for the above stations would be located in the unit area where the different jobs are to be taught. It seems that this plan is becoming more popular since the teacher can supervise his students more efficiently.

Arrangement of Equipment

Every teacher knows that he can have a better shop program if he has his tools and supplies arranged near the place that the job is to be done. Also, if every tool is kept in a certain place (for example, silhouetted on the wall) then the tools will be stored easier and found when needed.

I think we will agree that the first objective of shop teaching is to develop individual skills. In order to do this practical experiences must be provided that relate to actual farming conditions. Emphasis should be placed on good work habits rather than on the number of projects completed. The shop course content should always be based on the needs of the individuals taught. In order to accomplish the desired results in a farm shop program it is very important that the shop be arranged in a way that the teacher can organize his teaching so as to be able to teach various jobs simultaneously. The unit system lends itself to this procedure and makes teaching much more effective.

It has been said many times that a vocational department never has too much room, especially the shop, and I believe that all departments in the future will be inadequate unless a minimum of 2400 to 3000 square feet of space is provided. □

**Featured in
February—**

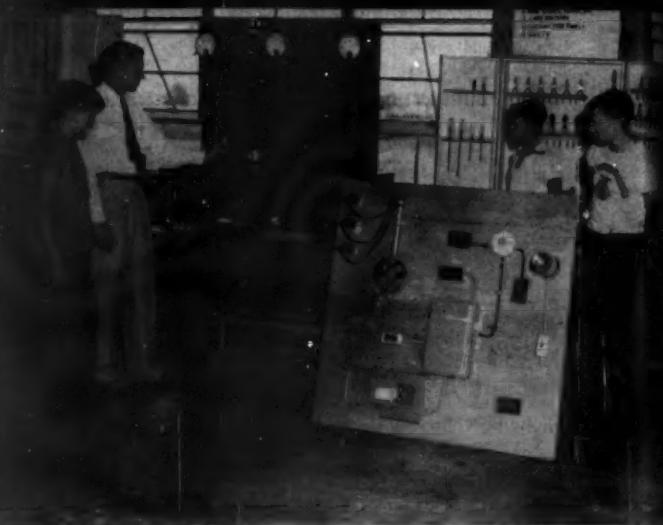
**Improving
Professional
Status**



Modern vocational agriculture building and teacher's home Tchula, Mississippi.



Part of the plumbing area.



The electrical area.

Stories In Pictures . . .

Various Areas of a Well-Planned Farm Shop

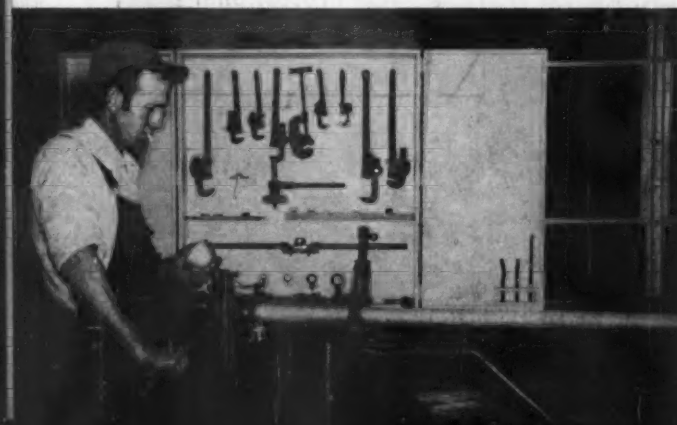
Pictures from Rogers Vo-Ag department,
Florence, Alabama.

(Same shop shown on cover page)



Another part of the
plumbing area.

A member of the Veterans On-the-
farm Training class uses the plumbing
area to cut threads on some pipe
for use on his farm.



A view of the woodworking area.



